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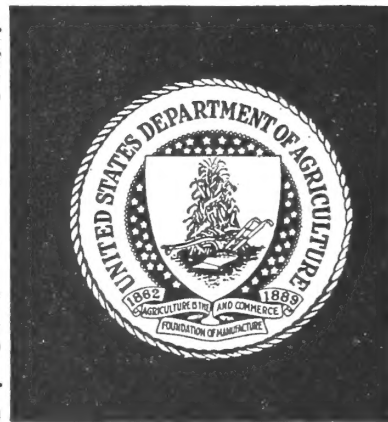




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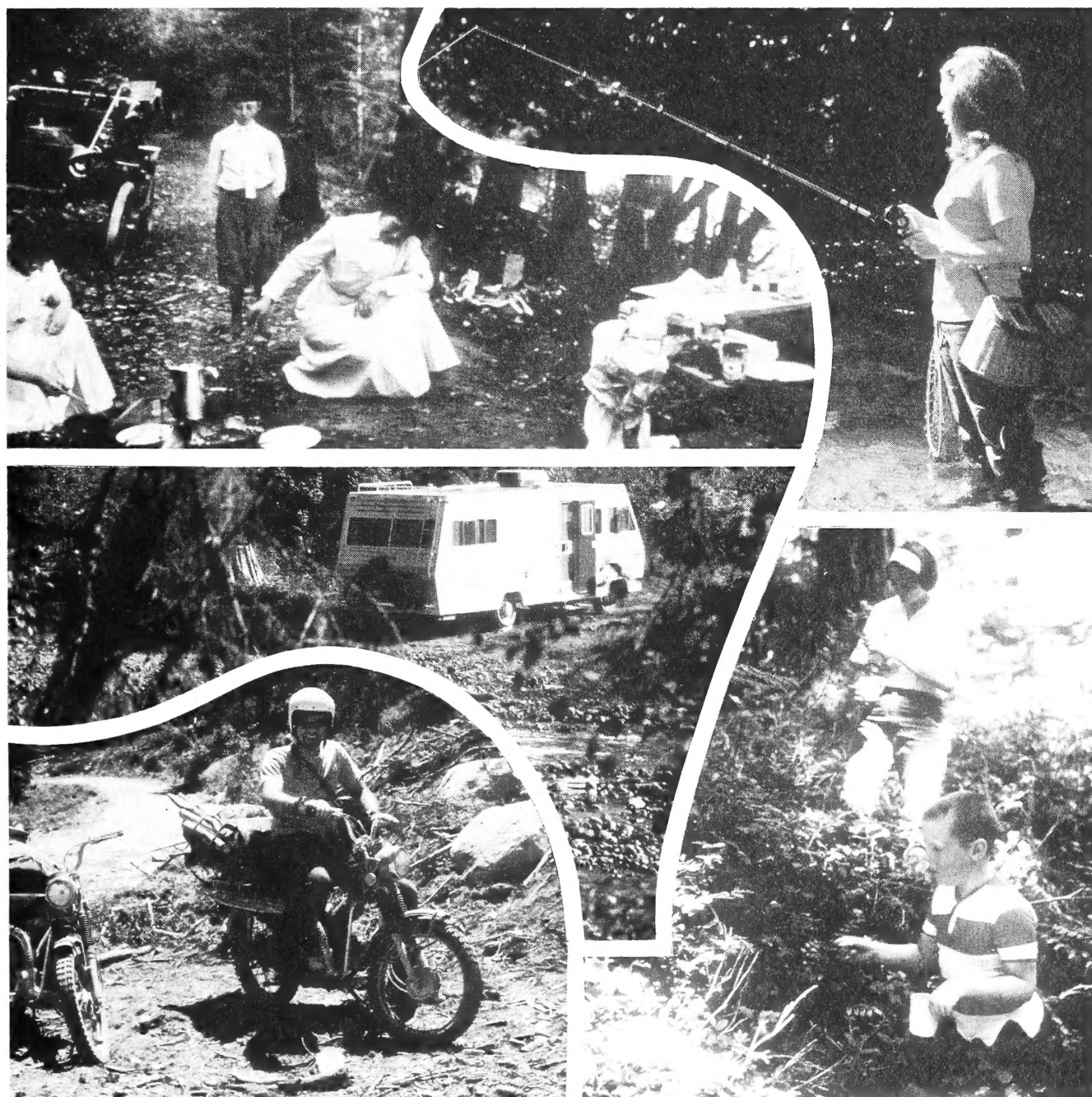
Research Paper  
PNW-319

June 1984



# The Value of Roaded, Multiple-Use Areas as Recreation Sites in Three National Forests of the Pacific Northwest

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**Clark, Roger N.; Koch, Russell W.; Hogans, Mack L.; Christensen, Harriet H.; Hendee, John C.** The value of roaded, multiple-use areas as recreation sites in three National Forests of the Pacific Northwest. Res Pap. PNW-319. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station; **1984**. 40 p.

Dispersed recreation along forest roads in generally undeveloped areas is increasing rapidly in the West. To effectively manage this use and integrate it with other forest activities requires information about the preferences, expectations, and opinions of forest visitors and their patterns of recreation use. Results of a 3-year study of campers and day users in three roaded forest areas of Washington and Oregon suggest this type of area provides opportunities that are very different from those in developed campgrounds and primitive backcountry. Visitors to roaded, forested areas like the generally unpaved road access, the low level of use, and the freedom to alter campsites to suit their objectives. Although this type of recreation is found in conjunction with resource management activities, such as logging and livestock grazing, recreationists do have favorite sites they return to year after year. Such sites may, therefore, warrant some protection. Future management programs must consider the value recreationists place on these sites and area attractions and the noneconomic as well as economic costs associated with altering these settings.

**Keywords:** Dispersed recreation, recreation (dispersed), recreation use, roads (forest), logging effects, recreation management, multiple use — recreation, recreationists.

Recreationists using selected roaded areas in three National Forests in the Pacific Northwest were surveyed to determine their patterns of use, preferences, and concerns regarding management practices in the areas. Logging has occurred within each area, and much of the recreation use has resulted from effects of timber management; for example, roads and clearcuttings. Few recreation facilities exist in the roaded areas.

Visitors sampled prefer roaded, forested areas over Wilderness Areas and backcountry or developed campgrounds. Lack of more desirable areas was not a reason they visited these locations; reasons included privacy, lack of development, freedom, and the fact that camping in such areas is "their style."

Users generally did not desire additional facilities and conveniences in the areas. Some were concerned that "improvements" such as garbage cans, toilets, or water supplies might attract other people, thereby increasing the competition for available sites.

Users indicated that opening new areas for such recreation is a good reason for building new roads, but they do not want more roads in the areas they already visit. Road access is important to them, but they generally do not want roads to be paved.

Many of the users believe other resource management practices can be compatible with recreation. Most of the users studied in these areas depends on logging and associated roads. Unlike Wilderness Area users, visitors to roaded areas do not object to logging (or grazing) in one of the areas where it is common per se. Although the size of clearcutting and its location relative to roads and campsites are important, visitors to the study areas do not reject roads, logging, and clearcutting as might Wilderness Area users.

## Introduction

The location, design, and maintenance of roads are key elements in providing diverse opportunities. Locating appropriately designed roads in desirable locations will allow users to create campsites to accommodate their needs. Ignoring these elements will eliminate many options for the public.

It may be necessary to destroy some recreation sites when entering an area for additional timber harvest, but the forest manager should be aware of the effect such a decision has on the forest visitor. Where possible, prime sites should be buffered from roads and clearcuttings to maintain qualities important to users.

There is great potential for increasing opportunities for dispersed recreation in roaded forests. The sensitivity of managers and their creativity in finding ways to accommodate forest users will maximize such options.

The invention of the automobile in the early 1900's and its subsequent improvement provided many Americans access to previously hard-to-reach forest lands. Recreationists on pleasure excursions into the forests often pulled off the road at an appealing location and set up impromptu campsites. They built stone fire rings to keep warm and to cook meals, and they used water from nearby streams and lakes (Meinecke 1937).

Foresters responsible for managing that land often reacted negatively to the dispersed, recreational use at unofficial sites; they felt that campfires would result in widespread forest destruction. The lack of sanitary facilities was perceived as a menace to public health (Stahl 1921) (fig. 1). Developed recreation sites with numerous convenience facilities originally emerged in this country as an attempt to dissuade dispersed recreation (Clark and Stankey 1979a, Ellison 1942).

A recent study indicated that managers felt benefits of dispersed, motorized recreation may be overshadowed by the costs (Downing and Moutsinas 1978, Downing and Clark 1979). Yet the growth in recreational activities associated with the use of motorized vehicles has been impressive, even with recent shortages of gasoline and increases in its price (fig. 2).

Dispersed recreation in generally undeveloped areas is one of the fastest growing forms of outdoor recreation in the United States (Lloyd and Fisher 1972). This type of recreation accounted for nearly two-thirds of all recreational use in National Forests in fiscal year 1982 with much of this use occurring on or along the more than 245,000 miles of National Forest roads and trails (fig. 3).



Figure 1.—Improved automobiles of the early 1900's enabled Americans to explore forest lands. Developed recreation sites first emerged in an attempt to discourage this dispersed recreation.

## Study Areas

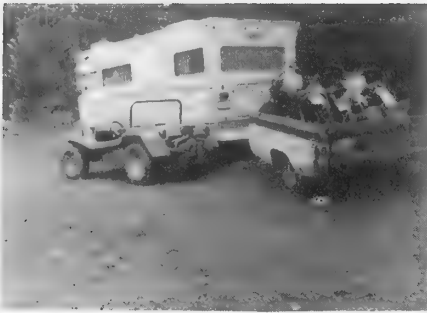


Figure 2.—In spite of increased gasoline prices, recreational activities using motorized vehicles continue to grow in popularity.



Figure 3.—Dispersed recreation on roaded forest lands is a popular form of outdoor recreation.

Managers and planners of public agencies and some private corporation now recognize the importance and appeal of dispersed, motorized recreation and are seeking effective ways to better integrate it with other forest uses. As one example, the importance of dispersed recreation to future management of the National Forests was addressed in the Resources Planning Act of 1974. The recommended policy calls for an increase in the supply of outdoor recreation opportunities and services through programs emphasizing dispersed recreation.

Compared to other recreational opportunities available to the public (for example, Wilderness Areas and developed campgrounds), little information has been generated concerning dispersed, motorized recreation. In 1975, in response to management concerns about how such recreation should be managed, the Wildland Recreation Research Project of the Pacific Northwest Forest and Range Experiment Station, USDA Forest Service, began studying this type of

recreation along roads in three National Forests in the Pacific Northwest. For the study, dispersed, motorized recreation was defined as any recreation that is generally dispersed in nature and that use of motorized vehicles is appropriate for access and for certain types of activities. Initially, inventories were completed to provide detailed geographical, physical, and social characteristics of dispersed recreation sites. Most of these sites were established by users (Hendee and others 1976a). In addition, the nature and amount of dispersed day and overnight use was determined (Hendee and others 1976b): (1) the majority of dispersed recreation occurs at low elevations in user-created campsites near water, (2) dispersed recreation use peaks on weekends and holidays (3) day use is far more prevalent than overnight use, (4) the majority of dispersed recreationists live less than 150 miles from the sites and tend to come from metropolitan areas, (5) most users have been to the area before, (6) weather plays an important role in participation patterns, and (7) dispersed recreationists participate in a wide array of activities including camping, hiking, fishing, hunting, motorbiking, and driving for pleasure.

The purpose of this paper is to describe results of a survey of dispersed recreationists along forest roads in selected areas in National Forests of the Pacific Northwest. The study was an attempt to determine the characteristics of dispersed campers and day users, and to identify their patterns of use, preferences, and attitudes. Objectives behind specific survey questions were to determine individual patterns of dispersed recreation use; to identify the preferences, satisfactions, and activities associated with dispersed, motorized recreation; and to determine how participants behave and feel in regard to resource management issues that could affect policies directed at dispersed, motorized recreation.

The survey was conducted in three study areas on National Forest lands in the Pacific Northwest. The areas were chosen because they reflected a range of dispersed, roaded recreation environments in the Pacific Northwest. Ten selection criteria were used to insure that the study areas chosen would include the conditions of greatest concern to National Forest management.<sup>1</sup> A total of 28 candidate areas were submitted for possible study. The Greenwater, Taneum-Manastash, and upper Clackamas areas of the Mount Baker-Snoqualmie, Wenatchee, and Mount Hood National Forests most fully met the selection criteria (fig. 4).



Figure 4.—Location of the Greenwater, Taneum-Manastash, and upper Clackamas study areas.

<sup>1</sup> These criteria were: interest by local managers in participating, intermingled public and private ownership, current or imminent road closures, spectrum of nearby recreation opportunities, proximity to a large metropolitan area, off-road vehicle use, forest conditions typical of large categories of National Forest land, different timber harvest methods used, fairly close transportation system to facilitate measuring traffic, and a minimum of unusual recreation attractions.

## Greenwater Study Area

The Greenwater drainage is located 60 miles southeast of Seattle in the White River Ranger District of the Mount Baker-Snoqualmie National Forest in western Washington. The main Greenwater road leaves State Highway 12—a scenic cross-mountain route to eastern Washington—less than 20 miles from a major entrance to Mount Rainier National Park. The main road ranges in elevation from 1,900-2,700 feet along the Greenwater River. There are no developed campgrounds or recreation facilities in the drainage, but there are private, State, and USDA Forest Service campgrounds within 20 miles. In much of the area, alternate sections of land are owned by a private timber company. The 78-mile road system was constructed primarily for timber harvesting and is maintained under share-cost road maintenance agreements between the Forest Service and private timber companies. There are numerous clearcuts throughout the drainage, logging is in progress at several locations, and additional timber harvest and road construction are planned. Previous research identified over 117 user-defined recreation sites along the 78 miles of road in 1975 (fig. 5A).



Figure 5A— The Greenwater study area, located 60 miles southeast of Seattle in the Mount Baker-Snoqualmie National Forest, has no developed campgrounds or facilities; active logging occurs at many locations.

## Taneum-Manastash Study Area

The Taneum-Manastash area is in the Cle Elum Ranger District of the Wenatchee National Forest in eastern Washington. The study area is a few miles south of Interstate 90, approximately a 2-hour drive from Seattle. Adjacent and intermingled lands are owned by the State of Washington and a private timber company. In 1976, the area include 47 miles of mainline logging road and 44 miles of dirt, spur roads. The study area covers approximately 70,000 acres and ranges in elevation from 2,000 feet along Taneum Creek to over 6,300 feet at the top of Quartz Mountain. There are several trailheads leading to adjacent backcountry and four nearby lakes. In the fall, the area is heavily used by deer and elk hunters. The area includes one moderately developed campground with 21 sites and 4 other locations with 2-5 minimally developed sites. The area has clearcut and selective harvest logging units and a long history of sheep and cattle grazing. Several cattle grazing allotments are currently active. Previous research identified 291 user-established recreation sites along 95 miles of road in 1975 (fig. 5B).



Figure 5B.—The Taneum-Manastash study area in the Wenatchee National Forest in eastern Washington has a long history of logging and livestock grazing; it is a favorite area for deer and elk hunting.

## Upper Clackamas Study Area

The upper Clackamas study area is in the Clackamas and Estacada Ranger Districts of the Mount Hood National Forest in western Oregon. The area lies adjacent to the main Clackamas River road, a two-lane forest highway that serves as a scenic forest loop highway from Portland through the Mount Hood and Willamette National Forests to the town of Detroit in western Oregon. The Clackamas drainage has hundreds of miles of forest roads built primarily for timber harvest. The popular Bagby and Austin Hot Springs are near the study area. Three minimally developed campsites (no toilets), three highly developed Forest Service campgrounds, and one privately developed picnic site owned by Portland General Electric Company are within the study area. Because the upper Clackamas is such a large area, only four of its roads were selected for study. They include: 21 miles of State Highway 224 from Ripplebrook Ranger Station to Squirrel Creek, 80 miles of the Fish Creek road system, 70 miles of the Oak Grove-Shellrock Creek road system, and 30 miles of Squirrel Creek road system. A total of 214 user-established recreation sites were identified in these areas in 1975 (fig. 5C).



Figure 5C.—The upper Clackamas study area, located in the Mount Hood National Forest in northwest Oregon, is a large area with hundreds of miles of forest roads and several minimally to highly developed campsites.



## Methods

### Characteristics of the Recreation Sites

Tables 1 and 2 summarize the major characteristics of the dispersed sites located in the three study areas; some of the data will be referred to elsewhere in this report. The characteristics are discussed in detail in Hendee and others (1976a).

To satisfy the objectives of the study, we developed a questionnaire and a brief interview for the users. The interview, conducted prior to giving questionnaires to the users, was, in part, an observation form and sought information related to the purpose of their trip, composition of their group, and whether their trip was for the day or overnight. The 9-page questionnaire consisted of 88 questions and took about a half hour to complete. The

survey was pretested for clarity and for its ability to elicit the type of responses we intended.

### Sampling

In earlier research in the same areas (Hendee and others 1976b), apparent differences emerged between campers and day users. Day users appeared to be oriented toward specific activities, such as motorcycling or fishing, and were scattered over large portions of the study area (fig. 6A). Campers, however, seemed to spend much of their time in camp doing chores and just relaxing; consequently they spent less time participating in specific recreation activities (fig. 6B). There were logistical problems sampling highly mobile day users, yet it was important to have a representative sample of both user types. Overnight camper and day users were therefore treated as distinct populations and were sampled separately. Although the two samples reflected the responses of each user group, they also created constraints in analyzing the combined data. The constraints will be discussed later.

The sampling period extended from July 1 to November 16, 1976, and was separated into distinct summer (July 1-September 5) and fall (September 5-November 16) seasons. During the summer season, questionnaires were distributed Thursday through Monday in the Taneum-Manastash area but were handed out only on Saturdays and Sundays in the Greenwater and upper Clackamas areas because of their infrequent use after Labor Day.

**Table 1—Miles of road and number of dispersed recreation sites in the three study areas, by type of road**

Study area and unit	River bottom roads	Midslope roads	Ridgetop and side roads	Total or average
Greenwater:				
Miles of road	9	5	9	23
Number of recreation sites	64	23	30	117
Average number of sites per mile	7.1	4.6	3.3	5.1
Taneum-Manastash:				
Miles of road	10	10	75	95
Number of recreation sites	96	57	138	291
Average number of sites per mile	9.6	5.7	1.8	3.1
Upper Clackamas:				
Miles of road	48	32	121	201
Number of recreation sites	179	25	10	214
Average number of sites per mile	3.7	.8	.1	1.1
All study areas:				
Miles of road	67	47	205	319
Number of recreation sites	340	105	177	622
Average number of sites per mile	5.1	2.2	1.9	1.9

**Table 2—Characteristics of dispersed recreation sites <sup>1/</sup>**

Characteristics	Greenwater		Taneum-Manastash		Upper Clackamas		Total	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
1. Site near roads:								
Main road	49	(42)	79	(27)	123	(58)	251	(40)
Spur road	65	(55)	153	(52)	25	(12)	243	(39)
Informal road	3	(3)	41	(14)	62	(29)	106	(17)
4-wheel drive road	--	--	20	(7)	3	(1)	23	(4)
2. Site capacity:								
No vehicles, tent only	2	(2)	10	(3)	14	(7)	26	(4)
1 vehicle	12	(10)	8	(3)	58	(27)	78	(13)
2 vehicles	37	(32)	16	(6)	101	(47)	154	(25)
3 vehicles	20	(17)	47	(16)	17	(8)	84	(13)
4 vehicles or more	46	(39)	212	(72)	24	(11)	282	(45)
3. Visual isolation (no. of other sites in view):								
0	41	(35)	128	(44)	96	(46)	265	(43)
1-3	66	(56)	137	(47)	88	(42)	291	(47)
4-5	9	(8)	23	(8)	18	(9)	50	(8)
6 or more	1	(1)	3	(1)	7	(3)	11	(2)
4. Dispersal (no. of sites within 1/2 mile):								
0	4	(4)	7	(2)	24	(11)	35	(6)
1-3	43	(38)	108	(37)	26	(12)	177	(29)
4-5	14	(13)	44	(15)	42	(20)	100	(16)
6 or more	51	(45)	132	(46)	120	(57)	303	(49)
5. Availability of firewood:								
Abundant	12	(10)	27	(9)	52	(24)	91	(15)
Available	104	(89)	220	(75)	116	(55)	440	(70)
Scarce	0	(0)	45	(15)	40	(19)	85	(14)
None	1	--	1	--	5	(2)	7	(1)
6. Availability of water:								
Adjacent to site	53	(45)	111	(38)	149	(70)	313	(50)
Available nearby	22	(19)	170	(58)	18	(8)	210	(34)
No water available	42	(36)	12	(4)	47	(22)	101	(16)
7. Toilets:								
Accessible to site	0	(0)	76	(35)	6	(3)	82	(13)
Not accessible to site	117	(100)	217	(65)	208	(97)	542	(87)
8. Facilities at site:								
None	155	(98)	207	(75)	211	(98)	533	(89)
Sign	2	(2)	49	(18)	0	(0)	51	(9)
Garbage can	0	(0)	2	--	2	--	4	--
Table	0	(0)	11	(4)	1	--	12	(2)
9. Estimated environmental impact at site:								
Extreme	2	(2)	0	(0)	8	(4)	10	(2)
Heavy	11	(9)	47	(16)	13	(6)	71	(11)
Moderate	36	(31)	146	(50)	76	(35)	258	(41)
Light	68	(58)	100	(34)	117	(55)	285	(46)
10. Estimated frequency of site use:								
Heavy	7	(6)	0	(0)	10	(5)	17	(3)
Frequent	26	(22)	35	(12)	14	(6)	75	(12)
Moderate	18	(15)	62	(21)	40	(19)	120	(19)
Slight	16	(14)	99	(34)	53	(25)	168	(27)
Infrequent	50	(43)	97	(33)	96	(45)	243	(39)
11. Recorded frequency of site use (1975):								
Heavy (25-56 nights)	2	(2)	13	(4)	9	(4)	24	(4)
Frequent (19-24 nights)	1	--	10	(3)	9	(4)	20	(3)
Moderate (13-18 nights)	7	(6)	22	(8)	23	(11)	52	(8)
Slight (7-12 nights)	22	(19)	42	(14)	40	(19)	104	(17)
Infrequent (1-6 nights)	24	(21)	88	(30)	73	(34)	185	(29)
Unused	61	(52)	121	(41)	60	(28)	242	(39)

<sup>1/</sup> Based on a 1975 Code-A-Site inventory. Approximate number of dispersed recreation sites inventoried: Greenwater 117, Taneum-Manastash 293, and upper Clackamas 214. Percentage in category 8 do not total 100 because the characteristics are not mutually exclusive.

Source: Hendee and others (1976a).



Figure 6A.—Day users engage in specific activities, such as motorbiking or fishing, and are generally scattered over a wide area.

Figure 6B.—Campers spend more time in camp doing chores or just relaxing.



### Selection of Sampled Users

Beginning July 1, field assistants distributed questionnaires to campers at their campsites in each of the three study areas. The next day, they distributed the questionnaires to day users as they entered the areas. On the third day, campers were sampled. This alternate-day pattern, followed for the remainder of the sampling period, was designed to nullify any biases that might have resulted from seasonal factors such as rainfall and snowpack.

**Day users.**—A day-use party was defined as one person or a group traveling together into the area for a stay that did not involve overnight camping. Questionnaires were distributed to day users every other sampling day by stopping every other vehicle at fire prevention stations at the entrance to the study areas. Hours of distribution alternated between morning (8 a.m. to 1 p.m.) and afternoon (1 p.m. to 6 p.m.) to cover the primary period of entry. Heavy traffic along the road sometimes made it impossible for the field assistants to interview potential study participants; some parties were then waved on to reduce traffic congestion. The number waved on did not exceed 20 percent for any of the areas. It was presumed that because day users arrived at the study area in random order, the failure to contact these users would not have a significant effect upon the outcome of the survey. After a selected day-use party had been stopped, the adult driver and passenger (where available) were asked if they would



participate in the survey. Women, often not represented in recreation surveys, were purposely sought out. When parties agreed to participate, the interview was conducted and the participants were instructed about how to complete and return the questionnaire. Less than 1 percent of the day users contacted elected not to participate in the interview (fig. 7).

Figure 7.—To sample day users, alternate vehicles were stopped every other day; occupants were interviewed then handed a questionnaire.

**Campers.**—A camping party was defined as all people camping together at a site. Sampling campers in the study areas presented a problem because the areas were too large to be covered by the number of field assistants employed. To overcome the problem, we constructed a frequency-of-use index based on data collected with the Code-A-Site system (Hendee and others 1976a) (see table 2). The study areas were then divided into functionally equivalent zones, enabling field assistants to select their sample from 100 percent of the camping parties in the zone. Had the Greenwater study area not been divided into zones, for example, only about half the 117 campsites could have been sampled. By dividing the area into two zones, however, any party entering either zone to camp overnight had a 50-percent chance of being sampled.

The zones in each of the study areas were sampled sequentially, beginning with a random start, on the alternate days. On each of these days, field assistants attempted to contact all camping parties present in the selected sampling zones. Campers arriving after the field assistants had visited the campsites on their patrol route were included in the survey only if the campers remained in the area long enough to be included in the next round of sampling. The field assistants varied their patrol routes by starting at opposite ends of the sampling zone each time they distributed questionnaires to avoid any bias resulting from a constant patrol route. The core sampling times were from 8 to 10 a.m. and from 4 to 8 p.m. It was not practical to sample during midday because many campers left their sites to participate in offsite activities (fig. 8).

When calling on an occupied campsite, the uniformed field assistants explained the nature and purpose of the study and asked if the head of the party (selected by the party) and a female or male companion (if both were present) would like to participate. If they agreed, the field assistant conducted the interview, explained how to complete and return the questionnaire, and thanked the party for their cooperation. Less than 1 percent of the camping parties declined to participate.



Figure 8.—Field assistants visited campsites on alternate days to distribute questionnaires to overnight campers in selected sampling zones.

## User Response to the Survey

### Methods of returning questionnaire.—

Potential respondents were instructed to return the questionnaire in one of three ways: (1) complete it while in the study area and return it at the fire prevention check station when they left, or (2) give it to the field assistant at a mutually agreed upon time, and (3) complete the questionnaire after leaving the site and return it in a prepaid envelope included with each questionnaire. Although the first two methods were encouraged to help increase the response rate, the majority of questionnaires were returned by the third method.

**Follow up procedures.**—During the interview the head of a party was asked to write his or her name and address on a post card; the card was then kept by the field assistant. At the end of every week in the field, each post card was given to clerical staff; the questionnaire number and the name and address of the potential respondent was then sequentially entered on lists by study area. If we did not receive the questionnaire after 1 week from the date of interview, we mailed the post card to the potential

respondent. The post card contained a printed reminder to mail a completed questionnaire. If we had no response by the end of the second week, we mailed an identical questionnaire to the potential respondent with a personalized letter from the field assistant. At the end of the third week we mailed a final post card reminder. If we still did not receive a questionnaire, we classified the party as a nonrespondent and made no further effort to contact the individual.

**Response rate.**—Of the 3,435 questionnaires that were distributed to day users and campers in the three areas, 2,180 (63 percent) were returned (table 3). The response rate was slightly higher for campers (68 percent) than for day users (60 percent) and differed somewhat among the areas (Greenwater 60 percent, Taneum-Manastash 75 percent upper Clackamas 59 percent). The discrepancy in response rate between areas was related to workloads of the field assistants stemming from conditions within study areas. For example, the Taneum-Manastash (where the highest response rates were obtained) had relatively few visitors and permitted field



**Table 3—Number of respondents and response rate for questionnaires distributed, by study area <sup>1/</sup>**

Study area	Campers	Day users	Total or average
Greenwater:			
Number of respondents	284	375	659
Response rate (percent)	(63)	(58)	(60)
Taneum-Manastash:			
Number of respondents	419	268	687
Response rate (percent)	(79)	(70)	(75)
Upper Clackamas:			
Number of respondents	195	639	834
Response rate (percent)	(60)	(58)	(59)
All areas:			
Number of respondents	898	1,282	2,180
Response rate (percent)	(68)	(60)	(63)
Statistical summary	$\chi^2=221.4$ ; $p \leq 0.001$ ; not significant		

assistants to spend more time conducting the interview and revisiting campsites to pick up questionnaires. Conversely the large amount of weekend traffic along State Highway 224 in the upper Clackamas area tended to result in "rushed" interviews at times.

**Comparison of respondents and nonrespondents.**—Because all potential respondents were briefly interviewed before being given questionnaires, we have some information about those who did not respond. In the case of day users, respondents were more likely to have visited the study area previously, and were slightly more likely to have been classified as senior citizens. No statistically significant differences between respondents and nonrespondents were found for size of their city of residence, weekday versus weekend use, and size of their party.

For campers, respondents were more likely to have been contacted on a weekday, to be senior citizens, to have stayed in the study area a longer period of time (thereby increasing followup contacts), and to have camped in a recreational vehicle rather than a tent.

Responding campers were also more likely to have been with a smaller-than-average group (less than 6 people). No statistically significant relationship was observed between the size of their city of residence or their tendency to respond.

Most of the statistically significant differences were small and none of the differences observed is believed to have any major substantive importance for the findings described in this paper.

This section summarizes the responses from 2,180 persons in the three study areas. Discussion of the results covers background characteristic, patterns of recreation, preferences for recreation setting, perceptions of management problems, and attitudes about specific forest management activities.

As indicated previously, day users and campers were sampled separately. Although the data from each sample reflect the views of that type of user, the samples cannot be combined without knowing the relative proportion of day users and campers in dispersed recreation areas. To avoid this complexity, the samples have not been combined in the following analyses, and responses are reported separately for day users and campers on all issues. To facilitate comparisons, all tables present the data as percents; this effectively standardizes the two samples, which were of unequal size (Reynolds 1977). The reported statistics however, have been calculated from the actual values of each cell in the table.

Statistical tests (Chi-square, difference-of-proportions) were performed to determine the difference in responses between the day users and campers. Where no significant differences were apparent, it can be assumed that these data reflect the general view of all dispersed area users. Where statistical differences were significant, a measure of association (gamma) was used to indicate the degree to which campers and day users differed in opinion. For issues in which this difference is large (as measured by gamma), it will be important to consider the views of each type of user when attempting to reflect dispersed area recreationists in general.

## Background Characteristics of the Respondents

A brief synopsis of the background characteristics of respondents is presented to help the reader interpret the data presented in this paper. A few comparisons are made where data are available between the respondents in this study and those in other recreation studies.

**Residence.**—The majority of visitors to the three study areas drove about 2 hours or less to reach their destinations, coming from nearby metropolitan areas—Seattle and vicinity for the Greenwater and Taneum-Manastash areas, and Portland and vicinity for the upper Clackamas area. In this regard, dispersed road-oriented users are probably similar to other recreationists.

**Age.**—Respondents averaged 38 years old for both campers and day users. No important differences were noted between areas. These ages are not indicative, however, of the users in the areas because the sampling strategy excluded persons younger than 18 years old and favored heads of parties who might be expected to be older. These data compare reasonably well with findings in several Wilderness Areas during the 1970's (Hendee and others 1978). Wilderness users tended to be slightly younger than the users of dispersed, roaded areas, but all age groups are well represented in both types of areas.

**Education.**—Respondents in this study had received an average of 13 years education, although 50 percent more day users reported having 13-16 years of schooling than did campers. A smaller percentage of users in our study had 5 years or more of college than did Wilderness Area users in another study (Hendee and others 1978). Day users in our study more closely resembled Wilderness users in length of education than did the campers.

**Income.**—Average reported family income was about \$16,000 for both campers and day users, and about 80 percent of the sample reported total annual family incomes of greater than \$12,000. This average is somewhat understated because the questionnaire did not allow for persons earning more than \$24,000 to specify their exact income. As a comparison, average family income reported by the Bureau of the Census for this period was \$13,850 for Oregon and \$14,960 for Washington. So our sample appears somewhat more affluent than would be a sample of the general public, a finding similar to studies of other recreationists including Wilderness Area users.

**Sex.**—One intention of the sample design was to obtain about an equal number of males and females in the survey. For campers this goal was closely met (53 percent males), but for day users a much higher proportion of males were included in the survey (65 percent). The difference may have resulted from the higher proportion of men encountered as day users during both summer and fall seasons in these areas.

**Occupation.**—Professional/technical, craftsmen, kindred workers, and housewives accounted for almost half the respondents. An additional quarter of the sample were in the managerial/administrative, clerical, and retired categories, with the others widely spread among a variety of other occupations. More day users than campers were professional/technical workers, similar to Wilderness Area users in this regard (Hendee and others 1978). Few farm workers visited these recreation areas even though the Greenwater and Taneum-Manastash areas are located near agricultural regions.

With respect to these background characteristics, the sample is diverse in composition. As Shafer (1969) indicates, there are no suitable stereotypes or mythical averages. Day users are similar to campers in some ways, yet different in others. Several of the differences noted seem to indicate that, as far as background variables are concerned, day users are more closely related to Wilderness Area users than are campers in the study. This issue will be discussed more thoroughly later.

## Patterns of Dispersed Recreation Along Forest Roads

**Respondents' history of use in the area.**—Results indicate that most visitors had been coming to this area for many years; the average user first visited the study area more than 7 years before the interview. The Taneum-Manastash users' average of more than 9 years was significantly higher than for the other areas, perhaps because relatively good hunting in this area encourages some hunters to return year after year.

Respondents had also visited the area on many occasions (table 4). Nearly half had been to the area more than 11 times in the past. The upper Clackamas appeared to be an exception in that more visitors had not been in the area before; a State highway goes through the area, which may result in more "pass-through" tourists who are unlikely to return in the future. The Taneum-Manastash and Greenwater areas have a more closed transportation system, limiting the pass-through users.

**Table 4—Percentage of users having previously visited the study area where contacted**

Number of visits	Campers	Day users
None	12	13
1	8	8
2-4	15	11
5-10	19	12
11 or more	46	56
Total	100	100
Statistical summary	$\chi^2=36.06$ ; $p \leq 0.001$ ; $\gamma=0.11$	

1/ Based on the number of users who responded: campers 888; day users 1,239.

**How they learned about the areas.**—Information about recreation opportunities in dispersed, roaded areas is not as readily available as it is for developed campgrounds or Wilderness Areas, for which agency maps, directories and popular publications are common. With this lack of information through agencies, how do people learn about these areas?

Table 5 indicates that informal personal contacts, most often family and friends, are the most important source of information about opportunities for recreation in dispersed, roaded areas. Fazio (1979) found similar results in a study of Wilderness Area users, even though more information is available about those opportunities.

The large number of people who found the areas while exploring was significant. Driving the roads in areas like the Taneum-Manastash, upper Clackamas, and Greenwater is a growing recreation activity. In these areas alone, more than 300 miles of roads of various standards are open for public travel.

Some forest managers have begun to prepare material on dispersed, roaded areas for distribution to the public. How this will affect use of areas like those studied cannot be determined yet. If the traditional nature of use and predominant, secondary sources of information holds true, however, the information may not have any direct effect. But those who do use such information may pass it on to others with a resulting multiplier effect. This could be particularly important when accurate information needs to be communicated. As Potter and others (1973) pointed out in a study of pheasant hunters, informal communication may result in erroneous or misleading messages being passed around.

#### Proportion of times users camp.

Nearly 90 percent of the respondents identified as campers in the survey usually or always camp when visiting dispersed, roaded areas (table 6). Only slightly more than 30 percent of the day users usually or always camp in such areas. But most day users camp at least sometimes—only 15 percent said they never camp when they go to such areas. Whether the difference in camping patterns between these two groups is reflected in their attitudes and preferences is explored later in this paper.

**Favorite sites.**—Not only did most recreationists return frequently to the same area, but they often return to favorite spots (85 percent of campers and 74 percent of day users) (table 7). This was true in all three areas for both campers and day users, although campers were more likely to return to favorite locations than were day users.

Favorite locations may have certain characteristics that have made them attractive. Consequently, if planning and management is to facilitate dispersed recreation in areas like those in this study, it is important to identify which types of sites have particular appeal for recreationists. Information such as that summarized in table 2 and discussed in later sections of this paper can aid in making decisions about future management of sites used by recreationists (fig. 9).

**Style of camping.**—Dispersed recreation areas are generally characterized by their lack of facilities (table 2). In our three study areas, for example, most camping parties compensate for the lack of facilities by bringing their own equipment (fig. 10). Table 8 shows that many bring recreation vehicles (RV's), with pickup campers and trailers being the most popular. These RV's provide users with many home-like comforts. About a third of the campers were staying in trailers, another third in pickup campers, a fourth in tents, and the remainder were in motor homes, vans, or out in the open. The high use of many types of RV's represents a large investment for users and is a measure of their commitment to this type of recreation. What effect increasing gasoline costs will have on the use of RV equipment in these areas cannot be ascertained, although trends towards smaller rigs and more frequent trips to closer areas have been noted.

**Table 5—How users learned about the study area where they were contacted <sup>1/</sup>**

(In percent)		
Source of information	Campers	Day users
Friends or acquaintances	46	40
While exploring the area	32	34
Family	21	23
While working in the area	6	6
Publication, map, or brochure	3	6
Organization or club	4	3
Newspaper, magazine, or mass media	2/	2
Land management agency representative or official	2/	2
Total <sup>3/</sup>	112	116
Statistical summary	$\chi^2=48.00$ ; $p < 0.001$ ; not significant	

<sup>1/</sup> Based on the number of users who responded: campers 879; day users 1,218.

<sup>2/</sup> Less than 1 percent.

<sup>3/</sup> Totals equal more than 100-percent because some respondents gave more than one source of information.

**Table 6—Percentage of occasions users camp when visiting dispersed, roaded, recreation areas <sup>1/</sup>**

Frequency	Campers	Day users
Never camp	2/	16
Sometimes camp	9	37
Camp half the time	4	13
Usually camp	39	24
Always camp	48	9
Total	100	100
Statistical summary	$\chi^2=679.00$ ; $p \leq 0.001$ ; $\gamma=0.77$	

<sup>1/</sup> Based on the number of users who responded: campers 877; day users 1,222.

<sup>2/</sup> Less than 1 percent.

**Table 7—Percentage of users who have and do not have favorite spots to which they return <sup>1/</sup>**

Favorite spot	Campers	Day users
Yes	85	74
No	15	26
Total	100	100
Statistical summary	$\chi^2=33.38$ ; $p \leq 0.001$ ; $\gamma=0.32$	

<sup>1/</sup> Based on the number of users who responded: campers 847; day users 1,160.



Figure 9.—Both day users and campers returned frequently to the same recreation area and often to the same spot. Identification of these popular sites will facilitate management of dispersed recreation.



Figure 10.—Dispersed recreation areas generally have no facilities, so campers bring their own equipment such as trailers, campers, or vans.

Table 8—Camping style of users <sup>1/</sup>

Camping style	Percent of campers
Trailer	22
Pickup camper	33
Tent	21
Motor home	5
In the open	4
Van	5
Total	100

<sup>1/</sup> Based on the responses of 819 campers.

**Number of vehicles at sites.**—Motor vehicles play a dual role in dispersed roaded areas. They serve as a means to get to preferred sites, and they also are a necessary part of many recreation activities. About half of the camping parties brought two or more vehicles to the study areas. Overnight users often drove passenger sedans or station wagons in addition to the RV's used for sleeping. They used these vehicles for such purposes as driving out of the area to stores, to fishing spots within the study areas, and to places where they could gather forest items such as mushrooms, berries, and firewood.

Frequently, especially in the Taneum-Manastash and Greenwater areas, one or more motorcycles or four-wheel drive vehicles were brought along in tow or in the backs of pickups to be used for recreation purposes. (see fig. 2).

**Size of party.**—Generally twice as many people were found in camping parties (about six) than in day-use groups (about three). This is consistent with the finding that camping parties had multiple vehicles more often than day users. Often camping parties were composed of multiple-family groups camping at the same site, which strengthens opportunities for intra-party socialization (fig. 11). The same holds true for both users of developed campgrounds and Wilderness Areas.

**Length of stay (campers).**—There was a significant difference in the length of

stay by study area (table 9). The mean length of stay for respondents was: Greenwater 2.6 nights, upper Clackamas 3.8, and Taneum-Manastash 5.2. We believe the popularity of the Taneum-Manastash area for hunting accounts for the longer average stay; elk and deer hunters had been observed camping out for as long as 2 weeks. To test the notion, we divided the responses of the Taneum-Manastash campers into two groups: summer (July 1-October 15) and hunting (October 16-November 14, deer and elk season). The mean length of stay was 3.0 nights for summer campers and 7.8 for hunters, supporting the belief that the longer average length of stay for that area resulted from the influence of the hunters.

Table 9—Expected length of stay for campers by study area <sup>1/</sup>

Study area	Mean number of nights
Greenwater	2.6
Taneum-Manastash	<sup>2/</sup> 5.2
Upper Clackamas	3.8
All areas	4.1

<sup>1/</sup> Based on the responses of 898 campers.

<sup>2/</sup> 3.0 mean number of nights for 225 summer season campers; 7.8 for 194 hunting season campers.



Figure 11.—Camping parties are often multi-family groups with several vehicles.



### Participation in specific activities.—

We asked respondents to indicate their activities while visiting the area. The results shown in table 10 indicate that all three areas serve a variety of purposes; each of the 39 activities listed on the questionnaire had some participants in each area. Activities receiving the greatest proportion of participants were:

*Greenwater*—Motorbiking, target shooting, day hiking (day users), berry picking, collecting forest items, camp chores (campers), visiting friends (campers), outdoor games (campers).

*Taneum-Manastash*—Operating four-wheel drive vehicles, snowmobiling, hunting, photography (day users), horseback riding, snowshoeing, getting food (day users), getting Christmas trees (day users), visiting other parties (campers).

*Upper Clackamas*—Driving, fishing, boating/canoeing, raft/river floating, mountain climbing, day hiking (campers), swimming, nature walks, photography (campers), snowplay (day users), getting food (campers), walking (day users), visiting-friends (day users), enjoying music, relaxing, outdoor games (day users), art work (campers), sunbathing, reading, playing cards.

Some interesting patterns are evident in these lists, which document the notion that each area—although similar to the others in terms of the extensiveness of activities—is different when intensity of participation is considered.

The upper Clackamas area had a higher frequency of participation in many more activities than either of the other areas, indicating that users come there for a wider variety of activities compared to the other areas. This might be expected because of the greater range of opportunities available than in the Greenwater and Taneum-Manastash areas. The upper Clackamas seems to cater to a more general-purpose user than do the other study areas.

**Table 10—Percentage participation in recreation activities, by study area**

Activity	Greenwater 1/		Taneum-Manastash 2/		Upper Clackamas 3/	
	Campers	Day users	Campers	Day users	Campers	Day users
Art work	6	4	5	5	11	7
Backpack	9	24	13	25	22	19
Bicycle	13	8	6	6	11	11
Boat/canoe	15	18	17	20	32	52
Climb mountain	14	19	14	19	21	40
Collect forest items	29	26	26	22	20	17
Collect rocks	30	24	23	27	33	20
Cross-country ski	2	5	2	8	5	7
Cut Christmas tree	8	13	12	24	13	11
Cut wood	22	30	21	41	23	26
Day hike	35	49	38	43	47	41
Do camp chores	85	68	79	70	79	77
Drink alcoholic beverages	35	24	28	25	34	16
Drive	44	56	46	57	50	73
Enjoy music	33	21	19	15	41	40
Fish	81	71	75	71	86	85
Four-wheel drive	24	28	36	33	12	10
Get food	15	29	19	31	22	13
Hunt	39	49	70	63	43	25
Motorbike	57	27	36	18	20	9
Nature walk	53	52	49	48	61	68
Photograph	26	28	30	33	37	27
Pick berries	46	57	32	46	39	34
Play cards	48	26	38	24	55	24
Play in snow	24	16	11	21	22	36
Play outdoor games	50	30	30	27	46	48
Raft/float river	13	12	5	13	27	16
Read	48	28	33	22	50	32
Relax	83	70	75	61	84	80
Ride horseback	12	10	17	20	13	7
Shoot targets	30	32	28	24	22	13
Snowmobile	10	7	12	15	4	2
Snowshoe	1	5	4	12	3	4
Sunbathe	44	25	25	20	46	27
Swim	31	28	20	24	53	58
Walk	84	69	71	60	82	80
View scenery	74	65	72	64	73	79
Visit friends	76	57	71	59	66	70
Visit other parties	20	21	28	18	22	15

1/ Based on the number of users who responded: campers 284; day users 375.

2/ Based on the number of users who responded: campers 419; day users 268.

3/ Based on the number of users who responded: campers 195; day users 639.

Some activities were more common in one area than in the other areas, attributable to available physical resources clearly distinguishing one area from another. Well-known motorcycle trails, berries, and gemstones in the Greenwater; four-wheel drive routes, prime hunting, easy access to Christmas trees and snow in the Taneum-Manastash; and main roads for driving, and an accessible river with reasonably good fishing in the upper Clackamas, all facilitate certain activities in one place more than they do in another. Indeed, as Burch (1965) indicated, people choose places that facilitate specific activities. (fig. 12).

Other activities seem to be related more to the type of user than to features of the area. Visiting friends and other parties, outdoor games, photography, horseback riding, nature walks, enjoying music, relaxing, art work, sunbathing, reading, and playing cards are possible in all areas, but each tends to appear more in one area than in the others.

The implications of the findings covered in this section seem clear. In areas such as those in our study, managers should recognize and protect features that offer different opportunities than other areas. Yet at the same time, one must avoid stereotyping areas as being good for one activity and not another. At least in the areas studied, many purposes are served for the visitors. Diversity is the key, and users seem to match their desired style to facilities of an area with little difficulty and few conflicts with other users.

### Preferences for Recreation Setting

Many studies of outdoor recreationists focus on the respondent's preference of location. Although preferences are often an imperfect indicator of subsequent behavior (Clark 1977, Heberlein 1977, Webb and others 1966), they do give some indication of the motives behind certain recreation choices or satisfactions and values sought. Planners and managers can benefit knowing how and why recreationists make choices about where to go and what to do at a recreation site. Because management actions may facilitate or hinder recreationists' choices, data on preferences can help determine the range of public values (figs. 13A and 13B).

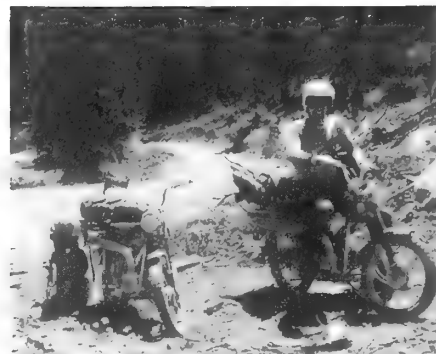


Figure 12.—All study areas offer a wide variety of recreational opportunities. In addition, each area provides unique physical resources that attract specific interests: A, The upper Clackamas area caters to a more general-purpose user and features a river with good fishing; B, The Greenwater area offers motorcycle trails, berry picking, and gemstones; C, The Taneum-Manastash area provides four-wheel drive routes, prime hunting, and easy access to Christmas trees.



Figure 13.—Knowing people's preferences helps managers determine the range of public interests and make better management decisions. For example, research shows that many users of developed campgrounds prefer socializing and having many comforts and facilities.



Figure 13B.—Most Wilderness Area users, however, prefer solitude with minimal or no conveniences.

The Recreation Opportunity Spectrum (ROS) framework is based on the assumption that recreationists seeking certain recreation experiences choose settings in keeping with their desires (Brown and others 1978, Clark and Stankey 1979b). Research on campers in developed areas and Wilderness Area users has documented that these two groups generally are at polar extremes from one another when it comes to preferences for recreation places. Users of developed, intensively used campgrounds tend to prefer socializing with many people outside of their own party; they desire many comforts and facilities in the campgrounds they frequent; and they are generally very tolerant of highly modified environments (Clark and others 1971, Hendee and Campbell 1969). Wilderness Area users, on the other hand, generally prefer

solitude with only minimal contacts with people outside their party, they desire areas without the trappings of modern civilization, and they prefer pristine environments with natural conditions (Hendee and Campbell 1969). Wilderness Area users, on the other hand, generally prefer solitude with only minimal contacts with people outside their party, they desire areas without the trappings of modern civilization, and they prefer pristine environments with natural conditions (Hendee and others 1978).

Clearly, the car campers in developed areas and Wilderness Area users have made choices, which put them at the two ends of the ROS. But did the users in our study choose the study areas because they had some special appeal, as indicated by their repeated use and length of stay, or because they could not find places more in keeping with their desires?

**Settings preferred by users.**—Results indicate there is a clear relationship between preferences and visitation to particular kinds of recreation settings. More than half the campers preferred environments much like the ones they were in when the questionnaire was given to them (table 11). Over 80 percent preferred either minimally developed campgrounds or dispersed, roaded areas.

**Table 11—Users' first preference for types of recreation settings <sup>1/</sup>**

(In percent)		
Type of setting preferred	Campers	Day users
Highly developed campgrounds <sup>2/</sup>	4	11
Minimally developed campgrounds <sup>3/</sup>	25	34
Dispersed, roaded areas <sup>4/</sup>	62	34
Roadless backcountry or Wilderness Areas <sup>5/</sup>	9	21
Total	100	100
Statistical summary	$\chi^2=175.49$ ; $p \leq 0.001$ ; $\gamma=0.13$	

<sup>1/</sup> Based on the number of users who responded: Campers 810; day users 1,135.  
<sup>2/</sup> Campgrounds or picnic areas with many facilities, such as paved roads, flush toilets, water faucets, tables, permanent fireplaces, and sometimes electricity and/or showers.  
<sup>3/</sup> Campgrounds or picnic areas with only rustic facilities, such as outhouses, tables, fireplaces, and water at a few central locations.  
<sup>4/</sup> Recreation areas where informal campsites have been established, but there are no official facilities.  
<sup>5/</sup> Areas where the only access is by hiking or horseback.

Day users, although indicating roughly the same order of preference, gave very different responses: only one-third gave dispersed, roaded areas as the first preference. About equal numbers of day users preferred minimally developed and dispersed, roaded areas followed by backcountry or Wilderness Areas. A small proportion indicated their first preference as highly developed campgrounds.

Although some significant differences were noted between areas, these were largely a matter of degree rather than order. In all areas, a higher percent of respondents preferred dispersed, roaded recreation over minimally developed sites, but preferred minimally developed sites over backcountry. Least preferred by both overnight and day users in all areas were developed recreation sites.

Campers seem to come to dispersed roaded areas because they prefer them. But day users show an equal or stronger preference for other types of areas, which may explain why they use the areas during the day for a variety of recreational activities but do not camp there as frequently.

#### Number of trips to different settings.—

As would be expected, based on the preference described above, people in the study visit dispersed, roaded settings more frequently than other settings (table 12). More than 90 percent of the campers and 80 percent of the day users had visited this type of setting, with more than a third visiting 6 times or more. Only a small proportion of the campers and day users did not visit dispersed, roaded settings during the year prior to responding to our questionnaire.

**Table 12—Percentage of users visiting recreation settings during the year prior to the study, by type of setting and number of visits.**

Type of setting and user group	Number of visits					Total	Statistical summary
	None	1-2	3-5	6-8	9 or more		
Highly developed campgrounds:							
Campers (N=800) <sup>1/</sup>	50	33	12	3	2	100	$\chi^2=2.47$ ; $p < 0.65$ ; not significant
Day users (N=1,115)	50	32	12	3	3	100	
Minimally developed campgrounds:							
Campers (N=795)	20	37	25	9	9	100	$\chi^2=3.15$ ; $p < 0.53$ ; not significant
Day users (N=1,140)	18	35	28	10	9	100	
Dispersed, roaded areas:							
Campers (N=831)	7	22	31	16	24	100	$\chi^2=53.67$ ; $p \leq 0.001$ ; $\gamma=0.17$
Day users (N=1,135)	16	27	23	12	22	100	
Roadless backcountry or Wilderness Areas:							
Campers (N=759)	64	18	10	4	4	100	$\chi^2=66.90$ ; $p \leq 0.001$ ; $\gamma=0.31$
Day users (N=1,076)	45	25	13	7	10	100	

<sup>1/</sup> Numbers in parentheses indicate the number of users who responded.

Highly developed campgrounds and roadless Wilderness Area/backcountry settings are clearly much less popular with recreationists visiting the study areas than minimally developed campgrounds and dispersed, roaded, recreation areas. About half or more reported that they did not use these other areas at all; most of the remainder visited them only once or twice. An exception (but consistent with earlier data) is that more day users reported going to roadless areas, and visited these areas more often, than did campers.

In addition to their strong preference for the dispersed areas, recreationists there also indicated they tended to use such areas more frequently than they did other types; the relationship between preference and actual participation was significant and strong. Although there was a positive relationship between preference and patterns of use, recreationists did use other types of recreation settings as well, again documenting the uncertain relationship between stated preference and actual behavior: perceived availability of alternatives, seasonal variation in access to preferred places, influence of family or friends, purpose of the trip, or the desire for diversity. As Shafer (1969) points out, there is no such thing as an average recreationist. In this case, variety may truly represent the spice of life for many of these people.

#### Childhood recreation participation.—

To gain some insight about how recreationists learn about dispersed recreation, we asked respondents to indicate what type of forest recreation they participated in most often as children. Data in table 13 indicate that of those who camped as children, most went to the more dispersed, undeveloped areas; only about 10 percent of the users visited highly developed campgrounds most often as children. The latter setting may have been less available more than 20 years ago than at present, but the results do indicate that the majority of our sample camped as children in places similar to where they tend to camp now; a statistically significant relationship was found between childhood participation and present patterns of use. Similar findings have been documented by Yoesting and Burkhead (1973) fig. 14).

**Table 13—Type of recreation setting users visited most when they were children<sup>1/</sup>**

(In percent)		
Type of setting	Campers	Day users
Highly developed campgrounds	10	9
Minimally developed campgrounds	27	31
Dispersed, roaded areas	31	28
Roadless backcountry or Wilderness Areas	19	20
Did not camp	29	26
Total	116	114
Statistical summary	$\chi^2=6.94$ ; $p < 0.14$ ; not significant	

1/ Based on the number of users who responded: Campers 898; day users 1,262.

2/ Totals equal more than 100 percent because some respondents indicated more than one setting.



Figure 14.—The majority of the people sampled camped as children in places similar to those they tend to camp in now. Information about childhood recreation participation may give some insight about how users learn about dispersed recreation.

#### Future use of recreation settings.—

What people say about their anticipated future behavior may also be a good indicator of their like or dislike (preference and/or commitment) for a particular type of recreation setting (Heberlein 1977). The majority of campers and day users indicate that their future use of highly developed, minimally developed, and backcountry areas will remain the same or decrease (table 14). But a majority of

the campers and half of the day users say that their use of dispersed, roaded (but undeveloped) areas will increase. These data support the preferences described earlier and suggest that both day users and campers are committed to dispersed, roaded types of recreation opportunities and will use such areas more often in the future. In fact, data on recreation use gathered by the Forest Service nationally supports this finding.

**Reasons for liking and disliking different recreation settings.**—The format of the questionnaire permitted each respondent to list up to three reasons for liking and disliking each of the four types of recreation settings. Using procedures of content analysis developed for public involvement (Clark and Stankey 1976), the large number of differently worded, yet similar, responses was reduced to 29 basic reasons for liking each type of setting (table 15) and 28 reasons for disliking each type (table 16).

The responses shown in the tables are essentially positive and negative expressions of the same values. For example, in table 15, 15 percent of campers like dispersed, roaded recreation areas because they perceive such areas as not having too many people. In table 16, less than 1 percent of the respondents reported disliking these areas because of too many people. Together, the two tables provide an informative picture of the reasons this group of recreationists prefer less developed settings.

Both campers and day users gave only a few reasons for liking **highly developed campgrounds** (see table 15). A small minority of the sample liked the facilities associated with such areas and the fact that they are readily available. Negative comments, however, far outweighed positive ones. Highly developed campgrounds were viewed as being too crowded, too developed, too noisy, and too expensive. Previous studies of campground users found just the opposite: people choosing to camp there liked them for some of the same reasons dispersed area users disliked them (Clark and others 1971).



**Table 14—Percentage of users expecting to visit recreation settings in the future, by type of setting and pattern of use**

Type of setting and user group	Anticipated use compared to present practice			Total	Statistical summary
	Increase	Same as present	Decrease		
Highly developed campgrounds:					
Campers (N=783) 1/	15	62	23	100	$\chi^2=9.80$ ; $p \leq 0.001$ ; $\gamma=-0.13$
Day users (N=1,108)	19	61	20	100	
Minimally developed campgrounds:					
Campers (N=806)	32	60	8	100	$\chi^2=159.18$ ; $p \leq 0.001$ ; $\gamma=-0.08$
Day users (N=1,160)	37	56	7	100	
Dispersed, roaded areas:					
Campers (N=843)	62	34	4	100	$\chi^2=183.44$ ; $p \leq 0.001$ ; $\gamma=0.24$
Day users (N=1,132)	50	43	7	100	
Roadless backcountry or Wilderness Areas:					
Campers (N=761)	35	52	13	100	$\chi^2=14.99$ ; $p \leq 0.001$ ; $\gamma=-0.14$
Day users (N=1,085)	45	44	11	100	

1/ Numbers in parentheses indicate the number of users who responded.

**Table 15—Percentage of users who like recreation settings, by reason and type of setting<sup>1/</sup>**

Reason for liking	Highly developed campgrounds		Minimally developed campgrounds		Dispersed, roaded areas		Roadless backcountry or Wilderness Area	
	Campers	Day users	Campers	Day users	Campers	Day users	Campers	Day users
Not too many people	2/	2/	16	16	25	18	7	8
Developed	8	11	14	14	2	2	2/	2/
Not developed	2/	2/	9	11	13	12	5	8
Private	2/	2/	4	4	25	12	6	8
Peaceful	2/	2/	1	3	6	4	5	5
Lack of RV's 3/	2/	2/	2/	1	1	1	2/	1
RV's allowed	2/	2/	2	2/	6	3	1	2/
My style	2/	1	4	6	7	6	3	4
Like other users	2/	2/	1	2	1	1	2/	2
Accessible	2/	2/	1	2	5	6	2/	2/
Not accessible	2/	2/	2/	2/	1	2/	2/	2/
Preserve natural surroundings	2/	2/	2/	2	3	4	6	11
Few rules	2/	2/	2/	2/	2	2/	2/	2/
Clean	1	2	2/	2/	1	2/	2/	1
Can be used by all	2	5	5	6	3	3	1	2/
Do not use, but support	2/	2/	2/	2/	2/	2/	4	4
Feeling of discovery	2/	2/	2/	2/	1	2	3	5
Like to hike	2/	2/	2/	2/	2/	2/	6	6
Scenery	2/	2/	2/	2	3	3	6	5
Freedom	2/	2/	1	1	9	5	2	2
Like to hunt	2/	2/	2/	2/	3	1	2	1
Area is fun	2/	1	5	6	9	6	5	7
Not too expensive	2/	2/	1	2	3	2	2/	2/
Area is convenient	4	5	7	7	2	4	2/	2/

1/ Based on the number of users who responded: campers 898; day users 1,282. Only reasons given by 1 percent or more of the respondents for any of the recreation settings are listed. Other reasons given were: like rules and regulations, all cannot use, like because safe, can gather natural products, hunting not allowed.

2/ Less than 1 percent responded.

3/ RV=recreational vehicle.

**Table 16—Percentage of users who dislike recreation settings, by reason and type of setting<sup>1/</sup>**

Reason for disliking	Highly developed campgrounds		Minimally developed campgrounds		Dispersed, roaded areas		Roadless backcountry or Wilderness Area	
	Campers	Day users	Campers	Day users	Campers	Day users	Campers	Day users
Too many people	50	38	9	6	2/	2/	2/	2/
Too developed	20	21	3	3	2/	2/	2/	2/
Not developed enough	2/	2/	2/	2/	2	3	2/	2/
Lacks privacy	6	3	2	2/	2/	2/	2/	2/
Too noisy	4	5	2/	2/	2/	2/	2/	2/
Too many RV's <sup>3/</sup>	1	2	2/	2/	2/	2/	2/	2/
Cannot use RV's	2/	2/	2/	2/	2/	2/	2	2/
Not my style	6	7	1	2/	2/	2/	1	1
Too expensive	5	5	2/	2/	2/	2/	2/	2/
Dislike other users	1	2	2/	2/	2/	2/	2/	2/
Not accessible	2/	2/	2/	2/	2/	2/	3	3
Destroys natural surroundings	2	4	2/	2/	2/	2/	2/	2/
Too many rules	3	2	2/	2/	2/	2/	2/	2/
Not clean	2/	1	2/	1	2/	2	2/	2/
Cannot be used by all	2/	2/	2/	2/	2/	2/	6	7
Do not hike	2/	2/	2/	2/	2/	2/	9	4
Vandalism in area	2/	1	2/	2/	2/	2/	2/	2/
Area not fun	1	1	2/	2/	2/	2/	2/	2/

<sup>1/</sup> Based on the number of users who responded: campers 898; day users 1,282. Only reasons given by 1 percent or more of the respondents for any of the recreation settings are listed. Other reasons given were: too accessible, not enough rules, can be used by all, just not interested, too much Wilderness Area now, not enough Wilderness Area, not safe, no opportunity for hiking, not convenient, lack of freedom.

<sup>2/</sup> Less than 1-percent response.

<sup>3/</sup> RV=recreational vehicle.

People at the three study areas were more favorably inclined toward **minimally developed campgrounds** than highly developed ones. Many respondents see these settings as offering some of the advantages of more developed areas without the disadvantages. Examples of advantages include some facilities, convenience, and the fact that these areas are open to all regardless of the equipment they have, their skill at camping, or their physical condition. At the same time, they believe that minimally developed areas are less crowded, more private, more fun, and not as expensive to use as highly developed campgrounds. A minority feel these areas are also too crowded and prefer more dispersed settings.

Few people gave reasons for disliking **roadless backcountry or Wilderness Areas**, but those that did felt that these areas were not readily accessible. Recreationists at our three study areas who liked roadless areas reported reasons

generally similar to those given for dispersed, roaded areas and minimally developed campgrounds, but reported them less frequently. Some additional reasons for liking these settings centered around conservation and esthetic values such as preservation of natural surroundings and scenery, responses consistent with what previous research on Wilderness Area users has documented (Hendee and others 1978).

As might be expected, only a few people gave reasons for not liking **dispersed, roaded areas**: about 3 percent of the respondents felt these areas were not developed enough and 2 percent of the day users thought they were not clean enough. More people gave reasons for liking dispersed, roaded, recreation areas than for any one of the other three types. The questionnaires revealed that 25 percent of the campers liked dispersed areas because there were fewer people and they were private. About 12 percent of the campers and day users liked this

type of recreation site because it was not developed. Other people reported that they valued the freedom to do what they wanted that existed in such areas and that it simply was their style, fun, peaceful, or inexpensive.

Respondents in the study were also asked about specific things that affect their use and enjoyment of dispersed, roaded areas. These topics represent positive elements of dispersed, motorized recreation that may be negative attributes of other types of recreation opportunities. The conclusion reached after examining these opinions and information presented earlier is that dispersed recreation settings have attributes that make them different from other types of recreation opportunities. Table 17 shows the several reasons for liking or disliking dispersed, roaded recreation areas.

**Table 17—Reasons users like or dislike dispersed, roaded, recreation areas**

(In percent)

Questionnaire statement and user group	Response			Total	Statistical summary
	Disagree	Neutral	Agree		
A. I visit dispersed, roaded areas partly because there are not enough developed campgrounds: Campers (N=882) 1/ Day users (N=1,203)	78 73	9 16	13 11	100 100	$\chi^2=2.29$ ; $p < 0.32$ ; not significant
B. One reason I prefer dispersed, roaded areas is because there is no fee charged for camping: Campers (N=890) Day users (N=1,222)	18 19	21 27	61 54	100 100	$\chi^2=1.20$ ; $p < 0.55$ ; not significant
C. One of the values of dispersed, motorized recreation is that it is not regimented and controlled like other kinds of recreation: Campers (N=893) Day users (N=1,222)	6 7	10 16	84 77	100 100	$\chi^2=1.77$ ; $p < 0.41$ ; not significant
D. One nice thing about dispersed, roaded areas is that campers can alter sites to accommodate the needs of their camping party (for example, build new fire ring, set up tables, change parking spaces): Campers (N=893) Day users (N=1,222)	8 16	11 20	81 64	100 100	$\chi^2=7.27$ ; $p < 0.26$ ;
E. I visit dispersed, roaded areas to engage in activities not allowed or appropriate in developed recreation areas (for example, motorbiking, picking flowers): Campers (N=885) Day users (N=1,213)	33 39	15 18	52 43	100 100	$\chi^2=1.63$ ; $p < 0.44$ ; not significant
F. I view the challenge of exploring little-used back roads as an attraction of dispersed, roaded areas: Campers (N=890) Day users (N=1,217)	5 5	8 11	87 84	100 100	$\chi^2=0.53$ ; $p < 0.87$ ; not significant
G. One value of dispersed, roaded areas is the chance to camp, picnic, or play away from people not in my party: Campers (N=887) Day users (N=1,219)	3 5	7 12	90 83	100 100	$\chi^2=2.10$ ; $p < 0.35$ ; not significant

1/ Numbers in parentheses indicate the number of users who responded.

**1. Lack of developed campgrounds**—In our earlier studies of recreation use along forest roads, some managers believed the areas were used by campers only because there were an insufficient number of developed campgrounds. The data from this study indicate that is not the case: over 70 percent of both day users and campers disagreed. Our observations during the study indicated that nearby campgrounds were empty or

partially full. Obviously there was something special about these areas that brought recreationists to them.

**2. Lack of fees.**—Campers and day users agreed (about 60 percent) that lack of fees does influence their preference for dispersed, roaded recreation areas. The unanswered question is how much of their recreation behavior is influenced by lack of fees? If, indeed, dispersed,

motorized recreation has some unique appeal for those who participate in it, then we suspect that people might still accept some sort of fee, just as people in developed areas do.

**3. Lack of regimentation**—In contrast to developed recreation sites, and even to some Wilderness Areas, the three dispersed, roaded areas under study have few formal controls over user behavior.

Recreationists are generally left on their own to manage their behavior and any conflicts that may arise. A high proportion of both day users and campers (77 and 84 percent) indicate that lack of regimentation is one of the values of this type of recreation (Clackamas day users differed significantly from the other users by indicating less support for this statement). Consequently, if additional rules and regulations were instituted in such areas, it is possible that user satisfaction might decline if those rules hinder goals defined as appropriate by these recreationists.

**4. Ability to alter sites**—Campsites in the three study areas are characterized by a general lack of facilities or management. Recreationists are often observed moving campfire rings, erecting shelters or temporary outhouses, or moving logs and rocks to facilitate access to the sites. In so doing, they are able to accommodate the site to their own group activities. There was strong agreement that being able to alter sites is an important attribute of dispersed, roaded areas. In our study, there was much higher agreement among campers (82 percent) than day users (63 percent). This is logical because day users generally would require fewer site modifications to suit their needs than would campers. These data suggest that users would not like management actions that would make it more difficult to alter sites (permanent fire rings for example). Significant differences were noted between the areas for both campers and day users. For both populations, support for altering sites was strongest in the Greenwater, followed by Taneum-Manastash and upper Clackamas. In all cases, though, most users preferred being able to alter sites to meet their needs (fig. 15).

**5. Allows certain recreation activities**—When choosing an area as a location to engage in certain activities, recreationists must learn if the activities are allowed, and if so, under what possible restrictions or limitation. Motorcycles, for example, can be driven through a campground in most developed areas but not around camping sites or on trails. In dispersed, roaded areas, however, there are generally few restrictions if the terrain is suitable for the activity. About half the campers and day users said they came to the study areas to do things they could not do in developed recreation areas. This reason

was most prevalent for campers in the Greenwater (69 percent) and Taneum-Manastash (53 percent) areas, where motorcycling and operating four-wheel drive vehicles are major activities. Only 31 percent of the upper Clackamas users visited that area for the same reason. Although day users in all areas shared the same view, it was not as strong as that of campers.

**6. Exploring little-used roads**—By definition, roads are necessary for vehicle access indisposed, roaded areas. But roads may also have some intrinsic appeal in themselves. The areas under study have many miles of roads, including high-standard paved roads that often become unpaved roads and then skid roads or informal tracks suitable for four-wheel drive vehicles. There was strong agreement by both day users (83 percent) and campers (88 percent) that exploring such roads was an attraction of dispersed motorized recreation. (For day users, slightly stronger support was found in the Greenwater area, followed by the Taneum-Manastash and upper Clackamas areas.) Perhaps there is an analogy between the hiker who explores on foot and the biker, four-wheel drive enthusiast, or car driver who uses a vehicle on the many miles of available roads in dispersed, roaded areas. They may be out for the same experience but seek it in a different style. It was by such exploring that many of the respondents found the recreation areas in the first place (fig. 16).

**7. Getting away from others**—Intensively used developed campgrounds are characterized by frequent (and often actively sought) interaction between people from different parties (Clark and others 1971 and Campbell 1969). The opposite is true in primitive recreation settings; such contacts are usually not desirable and are infrequent, although intraparty socialization appears very important (Burch and Wenger 1967, Hendee 1967, Hendee and others 1978, Stankey 1973). But what about dispersed, roaded areas? Table 17 (item G) and 18 show how recreationists in these areas feel about getting away from others in general and at their campsites. Getting away from others is important: more than 80 percent of both day users and campers agree. And in choosing campsites, about two-thirds want to be completely away from other campers; less than 5 percent want to be close enough to visit.



Figure 15.—Most recreationists enjoy having the freedom to alter their campsites to suit their particular needs.



Figure 16.—Exploring roads is one of the biggest appeals of dispersed recreation.

Hendee (1967) asked the same question of users in National Forest and National Park campgrounds and Wilderness Areas. Although some slight differences were found in that study between users of each type of area, those results are consistent when compared to findings from our study. Users of dispersed, roaded areas fall neatly between the car campground users and Wilderness users. That is, they prefer to get away from others more than campground users, but not as much as do Wilderness visitors.

The similarity between campers and day users is striking in this regard. Some people have hypothesized that most day users camp in neighboring developed campgrounds and only use the local, dispersed areas as playgrounds during the day. The data suggest this is not the case. When we asked day users where

**Table 18—Relationships users prefer between campsites<sup>1/</sup>**  
(In percent)

Relationship preferred	Campers	Day users
One that is far away from other campers not in my party	66	65
One with a few other campers around that are not in my party	24	24
One where I can visit and talk with campers in other parties	3	4
Do not care	7	7
Total	100	100

Statistical summary  $\chi^2=3.55$ ;  $p < 0.32$ ; not significant

<sup>1/</sup> Based on the number of users who responded: campers 873; day users 1,222.

**Table 20—Reasons users decided to visit study area where they were contacted, by rank<sup>1/</sup>**

Rank	Reason given by campers	Percent stating reason	Reason given by day users	Percent stating reason
1	Familiar with area	42	To sightsee in vehicle	23
2	To hunt	23	To fish	20
3	Close to home	20	Familiar with area	20
4	Uncrowded	20	Close to home	14
5	To motorbike	15	To hunt	14
6	To camp	15	To collect firewood	9
7	To sightsee in vehicle	11	To explore area	6
8	To fish	10	To gather berries	4

<sup>1/</sup> Based on the number of users: campers 898; day users 1,282. Questionnaire allowed users to state up to five reasons.

they came from before entering the study areas (home, a developed campground, or another dispersed area), 90 percent indicated that they came directly from home (table 19). It appears that both campers and day users were drawn to the area by the attributes of its setting, not because of the unavailability of some other type of area.

**Reasons for visiting the study area.—**Recreationists were asked to explain why they decided to visit the area where they

were surveyed. A variety of reasons were given (table 20); although there were statistically significant differences between overnight and day users, most of the same reasons were given by both groups but were ranked differently. The reasons are of two types: those related to the area (familiar with area, close to home, and uncrowded) and those related to specific activities (hunting, fishing, motorbiking, camping, sightseeing, collecting firewood, gathering berries, and exploring).

**Table 19—Origin of day users before they entered study areas<sup>1/</sup>**  
(In percent)

Origin	Day users
Residence	90
Developed site	6
Other dispersed site	4
Total	100

<sup>1/</sup> Based on the responses of 1,106 day users.

**Characteristics of preferred sites.—**

Much of the information generated as a result of this study addresses the general type of recreation settings preferred by users of the three study areas. During their visit to dispersed, roaded areas, campers and many day users spend much of their time at the specific, identifiable sites described in table 2. In their response to an open-ended question, campers and day users indicated that they looked for a variety of characteristics in a site when selecting a campsite (table 21).

Recreationists in the sample considered four criteria when choosing a campsite: positive and negative characteristics were mentioned more frequently than either specific facilities (discussed in the next section) or activities. Both campers and day users felt that access to water was the single most important factor when choosing among campsites. Lime (1971) noted a similar preference among developed campground users in the Lake States and Lucas (1964) found that Wilderness Area campers also preferred sites located adjacent to water. The Code-A-Site data for the three study areas clearly show that the most popular sites are those located near water and streams (84 percent) (table 2). Further analysis reveals that sites lacking water are generally used only during crowded periods, such as during holiday weekends, and for special purposes like hunting (Hendee and others 1976b) (fig. 17).



**Table 21—Criteria considered by recreationists in selecting a campsite within a dispersed, roaded area**

(In percent)

Criteria, characteristics, or features considered	Campers	Day users
Characteristics recreationists seek: <u>1/</u>		
Access to water	65	46
Presence of trees	26	17
Level area for tent or RV <u>2/</u>	18	12
Scenery	9	10
Access to firewood	7	5
Shade present or nearby	5	4
Large site	4	3
In a natural state	2	2
Good off road parking	1	1
Grazing for livestock	1	1
Characteristics recreationists avoid: <u>3/</u>		
Near people outside own party	23	20
Trashy	8	9
Near main road	6	6
Difficult access	4	4
Noisy	2	4
Hazardous for children	2	2
Windy	2	2
Too many trees	1	1
Wet	1	1
Dusty	1	1
Facilities available: <u>3/</u>		
Fire site	7	6
Sanitation	3	5
Tables	2	2
Garbage cans	1	1
Water	1	1
Activities the site permits: <u>1/</u>		
Access to fishing	5	5
Good hiking nearby	3	3
Close to bike trails	2	1
Wildlife viewing	1	1
Activities available (general)	1	1
Shooting	1	1
Access to forest items	1	1

1/ Based on the number of users who responded: campers 898; day users 1,282.

2/ RV=recreational vehicle.

3/ Based on the number of users who responded: campers 882; day users 1,282.



Figure 17.—Access to water was determined as the single most important factor in choosing a campsite.

Other positive features important to users are the presence of trees on a site, a level spot for a tent or RV, and scenery. Other informal contacts with recreationists indicated that trees were desirable for a variety of reasons including protection from the weather, privacy, and esthetics (fig. 18).

Undesirable features also play a critical role in site selection. More than 20 percent of the recreationists sampled mentioned that they wanted to camp away from people not in their party. Others wished to avoid "trashy" campsites, those close to main roads, and sites with difficult access (difficulty, of course, depends on individual definitions).

Table 22 shows preferences for facilities respondents would like provided in dispersed, roaded areas. These data show the general unimportance of facilities, with the exception of toilets and trash cans. Nearly half the campers and about one-fourth of the day users indicated "none"—they liked the areas the way they were. The results of this study indicate mixed support for facilities. Several points should be made:

1. Day users were more inclined to favor facilities than campers. Perhaps this explains why the day users do not camp there; in other words, they prefer more comforts and conveniences.

2. Some campers preferred to have more facilities, but camp there anyway; a practice probably related to the difference between what people prefer and what they find acceptable. Obviously, people who continue to camp in such areas find

**Table 22—Facilities users would like provided in the dispersed, roaded area where they were contacted<sup>1/</sup>**

(In percent)

Facility	Campers	Day users	Statistical summary
None, I like thing as they are	42	31	$Z=4.95$ ; $p < 0.001$
Garbage cans	43	48	$Z=-2.25$ ; $p < 0.02$
Toilets	36	44	$Z=-3.60$ ; $p < 0.001$
Centrally located drinking water	19	31	$Z=-5.40$ ; $p < 0.001$
Central sewage disposal	12	16	$Z=-1.80$ ; $p < 0.07$ ; not significant
Permanent fireplaces at sites	12	22	$Z=-4.50$ ; $p < 0.001$
More developed campsites	5	7	$Z=-0.90$ ; $p < 0.37$ ; not significant
Horse corrals <sup>2/</sup>	1	2	$Z=-0.45$ ; $p < 0.65$ ; not significant
Signs	<sup>3/</sup>	<sup>3/</sup>	

<sup>1/</sup> Based on the number of users who responded: campers 881; day users 1,192.

<sup>2/</sup> A write-in response.

<sup>3/</sup> Less than 1 percent



Figure 18.—The presence of trees, a level spot for a tent or RV, and scenery are important features to users.

the absence of facilities acceptable or they would go elsewhere.

3. If managers followed user preferences, they might change the nature of the opportunities enough to change user patterns. For example, if trash cans, toilets, and other conveniences were installed, the day users who presently do not camp in such areas (because lack of such conveniences is unacceptable to them) might then begin camping there, thus competing with current campers who find the lack of facilities acceptable. Some campers we contacted said they would like to have more facilities, until

they recognized the effects this might have on the use of their favorite area—that more people with different goals might come there. They recognized the reality of the invasion/succession process (Clark and Stankey 1979b, Clark and others 1971) and concluded they liked things just as they were. These data are a good example of the difficulty inherent in using preferences in making decisions about recreation management (Driver and Bassett 1977). The key in both cases seems to be insuring that a full spectrum of opportunities is available so all users can choose the type they like best.

### Recreationists' Perceptions of Management Problems

Recreationists in the three study areas were asked to indicate how important certain problems are in dispersed, recreation areas, and what sort of procedures they preferred for controlling such problems. In general, respondents did not believe there were many problems (table 23 and 24).

**Fire danger.**—Opinions were split on whether or not there is a great danger of recreationists starting fires (table 23). Day users were more likely to agree that this is a problem (48 percent) than were campers (35 percent). Apparently campers are more confident in their ability to

work with fire in the woods than are day users. A study of actual occurrences of fire in Washington and Oregon indicates that the risk associated with dispersed recreation is relatively low and that campers often discover, report, and put out fires before agency personnel reach the scene (Hogans 1979).

**Crowding.**—Depending on who responded, crowding is or is not a perceived problem. All three areas are characterized as having a few locations in which use is relatively dense, with overnight areas in the Greenwater the most concentrated. Use is generally spread over a large amount of space in the Taneum-Manastash and upper Clackamas areas.

Slightly under half the campers (43 percent) felt that some control would soon be needed in the area where they were staying during the study (table 23). Campers in the upper Clackamas area were more likely to foresee the need for control followed by campers in the Greenwater and Taneum-Manastash areas. A large number of both campers and day users were neutral on this issue (22 and 25 percent).

**Safety.**—One of the traditional concerns of recreation managers is for the safety of the forest visitor. The areas studied present a variety of potential hazards: hot springs, poisonous snakes, falling trees, logging traffic, and threats from other users to people and property.

Respondents in the study seemed generally unconcerned about safety hazards (table 23). The majority do not feel unsafe when camping or picnicking in dispersed, roaded areas, although upper Clackamas users tended to agree more than those from the other areas that safety is a concern. The majority do not believe there is a hazard from logging traffic, and even those who do see it only as "becoming" more of a problem (38 percent campers, 40 percent day users) rather than something of major concern at present (less than 10 percent) (table 24). Whether or not these perceptions result from users being unaware of problems or from their good fortune in the past is unknown.

Even though recreationists in the three areas seemed generally unconcerned about safety hazards, they did express on overwhelming sentiment that they be

**Table 23—Users' opinions about certain management problems in dispersed, roaded, recreation areas**  
(In percent)

Questionnaire statement And user group	Response			Total	Statistical summary
	Disagree	Neutral	Agree		
A. There is a great danger of recreationists accidentally starting a forest fire in dispersed road recreation areas: Campers (N=884) 1/ Day users (N=1,224)	48 34	17 18	35 48	100 100	$\chi^2=47.04$ ; $p \leq 0.001$ ; $\gamma=0.25$
B. At popular dispersed sites in this area some kind of control will soon be needed to reduce crowding: Campers (N=887) Day users (N=1,224)	35 21	22 25	43 54	100 100	$\chi^2=52.91$ ; $p \leq 0.001$ ; $\gamma=0.25$
C. We sometimes feel unsafe when camping or picnicing in dispersed, road recreation areas: Campers (N=882) Day users (N=1,215)	75 64	11 17	14 19	100 100	$\chi^2=28.22$ ; $p \leq 0.001$ ; $\gamma=0.23$
D. The Forest Service should alert users about potential hazards (for example, poisonous snakes, dangerous roads, polluted water, etc.) in dispersed road areas: Campers (N=890) Day users (N=1,237)	6 7	6 8	88 85	100 100	$\chi^2=4.74$ ; $p < 0.19$ ; not significant

1/ Numbers in parentheses indicate the number of users who responded.

alerted about potential hazards (85 percent of the day users and 88 percent of the campers) (table 23). This expression does not contradict their desire for lack of regimentation; it only says they want to be made aware of potential problems (fig. 19).

**Dust from gravel roads.**—Most roads in the three areas are not paved; truck and car traffic creates dust at times. Managers often suggest that dust is a problem for recreationists, but about half the sample felt it was not. There was less agreement in the Greenwater area, probably because of the heavy volume of fast moving logging traffic on the mainroad, which is close to most of the campsites. These data confirm that where dust is a problem, recreationists will report it as such.



Figure 19.—Although dispersed recreation users prefer the lack of regimentation, they do want to be alerted to potential hazards in an area.

**Noise from motorcycles.**—Although the upper Clackamas area has little motorcycle use, both the Greenwater and Taneum-Manastash areas have considerable activity. Opinions varied between day users and campers as to whether noise from motorcycles is a problem; day users perceive a much greater impact than do campers. Perhaps that is one of the reasons day users do not camp there.

The concept of "variable threshold" or "threshold of disruption" helps us understand this issue. For people who define motorcycle use as acceptable or who use an area expecting such use, the level of "acceptable noise" is probably higher than for others whose values and expectations are inconsistent with motorcycle use. Furthermore, the mere presence of this activity may be more important and detracting to some users than the noise level per se. Consequently, the level of motorcycle use and resulting "noise" (a personal judgment) is less important than

**Table 24—Users' opinions about management problems within the dispersed, roaded area where they were surveyed**

(In percent)

Problem	Response				Total	Statistical summary <sup>1/</sup>
	Now a problem	Becoming a problem	Not now a problem	No opinion		
A. Dust from gravel roads: Campers (N=882) <sup>2/</sup> Day users (N=1,197)	4 5	34 34	55 51	7 10	100 100	$\chi^2=8.60$ ; $p \leq 0.035$ ; $\gamma=-0.05$
B. Noise from motorbikes: Campers (N=883) Day users (N=1,209)	13 20	37 44	45 28	5 8	100 100	$\chi^2=75.77$ ; $p \leq 0.001$ ; $\gamma=-0.30$
C. Vandalism to personal or public property: Campers (N=881) Day users (N=1,207)	8 19	32 44	52 23	8 14	100 100	$\chi^2=186.78$ ; $p \leq 0.001$ ; $\gamma=-0.49$
D. Theft of equipment: Campers (N=879) Day users (N=1,206)	5 11	29 37	57 34	9 18	100 100	$\chi^2=131.68$ ; $p \leq 0.001$ ; $\gamma=-0.41$
E. Conflicts between recreation users (for example, hikers versus trailbikers): Campers (N=879) Day users (N=1,191)	5 10	35 43	49 30	11 17	100 100	$\chi^2=91.00$ ; $p \leq 0.001$ ; $\gamma=-0.37$
F. Lack of nearby stores, gas stations, and restaurants: Campers (N=881) Day users (N=1,204)	3 3	14 16	76 70	7 11	100 100	$\chi^2=11.54$ ; $p \leq 0.009$ ; $\gamma=-0.09$
G. Lack of directional signs on roads: Campers (N=876) Day users (N=1,198)	5 6	26 33	62 54	7 7	100 100	$\chi^2=12.95$ ; $p \leq 0.004$ ; $\gamma=-0.15$
H. Lack of maps: Campers (N=873) Day users (N=1,204)	8 10	32 31	47 44	13 15	100 100	$\chi^2=3.16$ ; $p < 0.37$ not significant
I. Danger of accidents with logging traffic: Campers (N=881) Day users (N=1,201)	3 6	38 40	48 39	11 15	100 100	$\chi^2=26.82$ ; $p \leq 0.001$ $\gamma=-0.18$
J. Litter or garbage around campsites: Campers (N=887) Day users (N=1,210)	5 10	54 63	40 23	1 4	100 100	$\chi^2=95.61$ ; $p \leq 0.001$ $\gamma=-0.36$

<sup>1/</sup>  $\gamma$  was calculated on all responses except "no opinion."

<sup>2/</sup> Numbers in parentheses indicate the number of users who responded.

the expectations of the users of the area in question. This issue and procedures for managing recreation impacts, including noise, are discussed in more detail in Clark and Stankey (1979a) and Harrison and others (1980).

**Vandalism and theft.**—The distinction between day user perceptions of vandalism and theft and those of campers is evident (table 24). More day users perceive vandalism and theft to be a problem than do campers, and more upper Clackamas campers felt that way than did campers in other areas. Perhaps more of the day users work or live in or near the area and are familiar with property theft and damage to logging equipment. In both groups, more respondents perceived vandalism as a problem than theft. How perceptions of recreationists compare to those of managers are discussed in Christensen and Clark (1979).

**Conflicts between recreation users.**—With the general lack of regulation in the three areas, it might be expected that conflicts would occur between recreation users, especially because there are so many types of activities. But this does not seem to be the case when user perceptions are examined. The difference between campers and day users is evident: day users see conflicts as more of a problem than do campers, perhaps explained by the backcountry orientation of the day users where encounters with other people are not as likely to occur (see table 15). This, too, may be one of the reasons day users do not camp in dispersed, roaded areas. Or, perhaps, day users have different sorts of conflicts with others than do campers.

In general, our observations and these data suggest that dispersed, roaded areas are relatively self-regulating. Each type of user tends to find their particular niche, and through such self-selection, minimize conflicts. For example, in one area of the Taneum-Manastash, motorcyclists and horse users are often seen sharing the same meadow—one group at each end. This is done here and elsewhere without formal regulation or zoning.

**Lack of services and information.**—As in most other respects in dispersed, roaded areas, recreationists are on their own with regard to bringing food and gas and finding whatever information they need. When we asked whether lack of stores, restaurants, and gas stations was a problem, the overwhelming response was that it is not (table 24). This supports earlier data suggesting that part of the appeal of such areas is the lack of developments, facilities, and conveniences. If that were not the case, they would probably go somewhere else (fig. 20).

A similar response, although not quite as strong, was found when we asked about the lack of directional signs. Most said it was not a problem. This may be related to the desire for exploring backcountry roads where directional signs may be a negative factor for some people. Somewhat stronger support for signs was found by campers in the upper Clackamas area than in the other areas, perhaps because of relatively less familiarity with the area than others have in their areas.

So concern was expressed, however, about a lack of maps. This is consistent with other responses—a large number of people want more maps that would aid their exploration. Another explanation might be that maps cannot impact a site as signs may for some users (fig. 21).

**Danger of accidents with logging traffic.**—Logging was taking place in each of the three study areas during the time of the study. In the Greenwater, a wide logging truck traveled down the main road every few minutes. Results show that most users did not regard logging trucks as a hazard. Approximately 5 percent considered logging trucks to be a problem, while about 33 percent thought trucks were becoming a problem. A possible explanation for this attitude is that logging generally did not take place during the weekends when most recreationists were present.



Figure 20.—Lack of facilities such as stores, restaurants, and gas stations is considered a positive rather than a negative feature of dispersed recreation use. Users simply bring their own supplies.



Figure 21.—Maps to assist in forest road exploration are generally preferred over directional road signs.

**Litter and garbage.**—A majority of both day users and campers believe that litter or garbage around campsites is becoming a problem. One reason is that they sometimes have to clean a site up when they arrive. The field assistants reported incidents where campers showed them bags of trash they had collected.



An observation study at the Greenwater area during the same study period found litter and garbage not to be a major problem, although some sites have user-established garbage pits. Nearly 90 percent of the campers packed out their garbage and a few users left garbage bagged or boxed at the fire ring. During the night, wildlife often scattered the contents throughout the camp. Some Forest Service fire patrols occasionally remove litter and garbage from recreation sites. For the most part, however, user-established sites were not maintained by the agency during the study period.

Litter does increase at campsites during the summer, but it does not seem to be a serious problem. The Litter Incentive System was used by the field assistants at Greenwater and demonstrated that many campers will help clean up their sites when asked to do so (Clark 1976, Muth and Clark 1978). Yet it might be necessary to educate dispersed area users on the adverse impacts caused by litter and garbage. Wilderness sanitation education is extensive (Hendee and others 1978), and strategies similar to the Forest Service's "no trace camping" policy might be used for dispersed recreationists (fig. 22).



Figure 22.—Litter or garbage around campsites is regarded as a problem by a majority of day users and campers. In the Greenwater area, however, responsible campers and litter incentive programs are keeping the problem under control.

**Sanitation.**—Resource managers, planners, and researchers are becoming increasingly concerned with environmental impacts produced by recreationists in dispersed recreation areas (Aukerman and Springer 1976, Downing and Moutsinas 1978, Lee and others 1970). One problem is the impact of human body waste on water quality. Lack of sanitary facilities in dispersed, roaded areas may be acceptable to some users but may contribute to conditions that could affect users' health and recreational enjoyment of the area.

The Taneum-Manastash area has four minimally developed sites with pit toilets. No facilities exist at dispersed sites along the State highway in the upper Clackamas area but toilets are available at the many developed campgrounds. No toilet facilities exist in the Greenwater.

Results of the study suggest that the potential for health and esthetic impacts from human waste does exist: 39 percent of the campers and 75 percent of the day users had no toilet facilities with them. More than in the other areas users at Greenwater reported they had equipment that made them self-contained.

Campers and day users were asked if they perceived the presence of human body waste near campsites as a serious threat to human health, water quality, and recreation enjoyment of the area (table 25). Opinions were generally mixed; about equal numbers agreed and disagreed. The large neutral response may be the result of a lack of knowledge about the problem or perhaps a reluctance to comment. A social and biological study conducted at the Greenwater area during the same period focused on the effects of dispersed recreation on water quality (Christensen and others 1979). Evidence of fecal pollution was intermittent and the isolation of *Salmonella arizonae* from the relatively clean watershed was localized, suggesting that potential health hazards do exist. Providing information to users about such conditions may be important, particularly because most users want to be informed of hazards. Some statistically significant differences were found between areas, but these were mostly small and unimportant.

A substantial number of campers (39 percent) and day users (52 percent) agree that human body waste is a threat to water quality. The water quality study in the Greenwater watershed found deterioration of water quality on weekends, when use was heaviest, as distinguished from weekdays (Varness and others 1978). The effects on water quality at specific sites by the number of people, self-contained vehicles, and rain were inconclusive (Christensen and others 1979).

The most concern for both day users and campers was the impact of human waste on the recreational enjoyment of the area. Almost half of the campers (44 percent) and over half of the day users (56 percent) agreed that it was a serious threat. Human waste was observed at most of the campsites in the Greenwater area; the majority was found less than 75 feet from the fire ring. Some campsites had up to 11 different human waste areas, found anywhere from onsite to trails offsite.

Users were asked if disposal of human body waste was not a problem because nature quickly takes care of it (table 26). The high response of users who either believed decomposition was quick or were neutral may be the result of their lack of knowledge. Little public information is available on decomposition rates and appropriate method of disposal. Management practices today recommend digging holes 8-10 inches in diameter and no deeper than 6-8 inches (Hendee and others 1978). The recommendation may vary between region and/or agency. In fact, little objective information is currently available about the effects of specific burying practices in different environments.<sup>2</sup>

<sup>2</sup> Sanks, R. L.; Temple, K. L. Final report on liquid and solid waste disposal. In: U.S. forest lands, Bozeman, MT: Montana State University; 1975; Grant FS-INT no. 7 [U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station; Ogden, UT].

**Table 25—Users' opinions about human body waste near campsites threatening the quality of the dispersed, roaded area where they were contacted**

(In percent)

Questionnaire statement, quality threatened, and user group	Response			Total	Statistical summary
	Disagree	Neutral	Agree		
The presence of human body waste near campsites in the dispersed, roaded area is a serious threat to:					
A. Human health					
Campers (N=872) 1/	47	18	35	100	$\chi^2=39.23$ ; $p \leq 0.001$ ; $\gamma=0.24$
Day users (N=1,206)	33	20	47	100	
B. Water quality					
Campers (N=874)	44	17	39	100	$\chi^2=58.32$ ; $p \leq 0.001$ ; $\gamma=0.27$
Day users (N=1,206)	28	20	52	100	
C. Recreation enjoyment					
Campers (N=878)	42	14	44	100	$\chi^2=36.98$ ; $p \leq 0.001$ ; $\gamma=0.23$
Day users (N=1,212)	29	15	56	100	

1/ Numbers in parentheses indicate the number of users who responded.

**Table 26—Users' opinions about whether or not the disposal of human body waste in dispersed, roaded areas is a problem<sup>1/</sup>**

(In percent)

Questionnaire statement and responses	Campers	Day users
The disposal of human body waste is not an important problem in dispersed road recreation areas because nature quickly takes care of it:		
A. Disagree	43	49
B. Neutral	15	16
C. Agree	42	35
Total	100	100
Statistical summary	$\chi^2=13.39$ ; $p \leq 0.001$ ; $\gamma=-0.12$	

1/ Based on the number of users who responded: campers 876; day users 1,214.

Many users in this study are not concerned about streams being polluted in the areas: they drink the water (table 27). But a companion study in the Greenwater found *Salmonella arizonae* and increased fecal coliforms intermittently. Still, according to bacteriological standards established by the State of Washington, the surface waters were found to be AA—acceptable for general recreation esthetic enjoyment (Washington Department of Ecology 1978). Water used for drinking, however, should contain less than 2 total coliforms per 100 milliliters. The evidence of pollution in the relatively clean water of the watershed suggests that potential health hazards exist and that managers need to prescribe appropriate practices regarding drinking water from the streams. In many places, including backcountry, users are encouraged to boil or treat water prior to drinking it (fig. 23).

**Presence of domestic dogs.**—In many developed campgrounds and in a growing number of parks and Wilderness Areas, dogs are either prohibited or must be physically controlled. No such regulations exist in dispersed, roaded areas, and the perception seems to be that these are

places where dogs can roam free without impacting people. We found in this study that nearly half the campers (44 percent) and a third of the day users (31 percent) had one or more dogs with them; many of the dogs were allowed to run loose (62 percent of camper's dogs and 54 percent of day users'). In areas where use is concentrated, the potential does exist for conflicts between parties because of dogs. Our experience over 5 years in these areas, however, suggests impacts are minor. But there is concern on the part of some managers that with the presence of human waste around many of the sites, dogs may act as a carrier for diseases.

**Users' versus managers' perceptions of problems.**—Results of our study indicate that users generally do not perceive many of the problems discussed to be of serious consequence. But the view of managers is quite different. In a companion study, managers were asked to rate the importance of the same problems (Downing and Moutsinas 1978). In almost all cases managers indicated a greater concern than did users (table 28). These results are discussed in more detail in Downing and Clark (1979).



Figure 23.—Most users reported they were not concerned about pollution in streams—they would drink the water. Evidence of some pollution, however, suggests potential health hazards; managers may have to prescribe methods of disposal.

**Table 27—Users' practice of drinking water from possibly polluted streams<sup>1/</sup>**

(In percent)

Questionnaire statement and response	Campers	Day users
Because it may be polluted, I do not drink the water from the main stream in this area:		
A. Disagree	62	48
B. Neutral	11	14
C. Agree	27	38
Total	100	100
Statistical summary	$\chi^2=45.13$ ; $p \leq 0.001$ ; $\gamma = 0.27$	

<sup>1/</sup> Based on the number of users who responded: campers 885; day users 1,236.

**Table 28—Percentage of managers and users who perceive certain impacts as serious, somewhat serious, or becoming serious<sup>1/</sup>**

Impact	Managers	Users
Litter/garbage	92	50
Vandalism	91	37
Danger of fire	86	40
Theft of equipment	86	27
Danger of accidents with logging traffic	81	29
Conflicts between recreationists	55	32
Presence of human waste near recreation sites	64	29
Water quality problems from human waste	44	43
Human health problems from human waste	39	40

<sup>1/</sup> Based on the number of managers and users sampled: managers 663; users 2,180.

Such differences have also been found between managers and users of developed campgrounds (Clark and others 1971; Lucas 1970) and in Wilderness Areas (Lucas 1964). Explanations for the differences include the possibility that managers have more information about the real nature and extent (magnitude) of the problems, or that managers and users agree on the magnitude of the problems, but disagree on how important they are (Clark and Stankey 1979a, 1979b). Whatever the reason for the difference, users should be informed about the nature of specific problems before managers attempt to control the problems.

### Attitudes About Forest Management Activities

Recreation along forest roads has been occurring for many years. But, the importance of this type of recreation has been recognized only recently by some managers. In many instances such use has been ignored until a problem occurs. Many managers still believe that the costs outweigh the benefits (Downing and Clark 1979, Downing and Moutsinas 1978). We asked respondents in the study to share their attitudes regarding certain types of forest management activities. Their comments are summarized.

#### Priority of dispersed, roaded areas.—

The findings presented thus far show that most respondents favor dispersed, roaded areas over other types of areas, such as developed campgrounds. When we asked people if dispersed, roaded areas should have higher priority for managers than establishing developed campgrounds, less than 20 percent disagreed (table 29). From data gathered, the study demonstrates that dispersed, motorized recreation has its own clientele and occupies an important niche along the Recreation Opportunity Spectrum (Brown and others 1978, Clark and Stankey 1979b).

**Road management.**—Roads and how they are managed play a key role in defining the nature of recreation opportunities. Without roads, the kind of recreation under investigation in this study would not be possible. The majority of roads in National Forests that provide recreation opportunities are the result of timber management (Hendee 1974). Many

**Table 29—Users' attitudes about priority of management for dispersed, roaded areas versus developed campgrounds in National Forests<sup>1/</sup>**

(In percent)		
Questionnaire statement and response	Campers	Day users
Dispersed road recreation activities should be a higher priority than developed campgrounds on National Forest lands:		
A. Disagree	13	19
B. Neutral	23	27
C. Agree	64	54
Total	100	100
Statistical summary	$\chi^2=22.11$ ; $p < 0.001$ ; $\gamma = -0.19$	

1/ Based on the number of users who responded: campers 883; day users 1,210.

resource managers recognize the dual role of these road systems, but how the roads should be managed for recreation purposes has not been determined. We asked users of dispersed, roaded areas about a variety of issues related to road management; their opinions are summarized in table 30.

Over half the campers and a third of day users agree that opening new areas for dispersed, motorized recreation is a good idea. They evidently like the opportunities they are using now and want to see more areas opened up for this type of recreation. This is in sharp contrast to Wilderness Area users, who want such areas left roadless (Hendee and others 1978).

Although they would like to see new areas opened up with roads, many respondents do not want to see more roads in the areas they were in, a feeling most strongly held by campers in the Taneum-Manastash area. As is true for many other things, people tend to prefer stability. This was particularly true in the Taneum-Manastash, where for many years road building had been minimal.

Since this study was conducted, however, many new roads have been constructed there. Future studies will determine what effect they have had on dispersed use (fig. 24).

Paved roads are generally easier to travel and less dusty. Consequently, many managers assume that paving would be good for recreationists. But most users in this study disagree, as they did in a study reported by Lucas in 1964. Only about one-third of the campers and day users think paving is a good idea; paving was most strongly rejected in the Taneum-Manastash area. They may recognize, and suggested by the ROS, that paving changes the nature of opportunity and subsequent recreation use. Paved roads may not be necessary to enhance the recreation experience that users seek in dispersed, roaded areas.

**Table 30—Users' attitudes about road management**

(In percent)

Questionnaire statement and user group	Response			Total	Statistical summary
	Disagree	Neutral	Agree		
Opening more areas for dispersed road recreation is a good reason for building roads into undeveloped, roadless lands:					
Campers (N=885) 1/	33	14	53	100	$\chi^2=42.16$ ; $p \leq 0.001$ ;
Day users (N=1,217)	46	15	39	100	$\gamma=-0.25$
More roads should be constructed in this area:					
Campers (N=878)	65	24	11	100	$\chi^2=1.72$ ; $p \leq 0.42$ ;
Day users (N=1,194)	63	24	13	100	not significant
Paving a few main forest roads for dispersed recreation would be a good policy:					
Campers (N=891)	54	15	31	100	$\chi^2=6.32$ ; $p \leq 0.04$ ;
Day users (N=1,228)	48	16	36	100	$\gamma=0.09$
It is alright to close some roads for management purposes such as:					
A. Road maintenance or repair work:					
Campers (N=875)	9	10	81	100	$\chi^2=1.13$ ; $p \leq 0.43$ ;
Day users (N=1,211)	7	10	81	100	not significant
B. To protect sensitive wildlife:					
Campers (N=870)	14	13	73	100	$\chi^2=19.96$ ; $p \leq 0.001$ ;
Day users (N=1,221)	9	10	81	100	$\gamma=0.24$
C. To improve hunting quality:					
Campers (N=871)	28	15	57	100	$\chi^2=8.78$ ; $p \leq 0.01$ ;
Day users (N=1,212)	26	20	54	100	$\gamma=0.02$
D. To reduce fire hazard:					
Campers (N=880)	9	11	80	100	$\chi^2=7.76$ ; $p \leq 0.02$ ;
Day users (N=1,215)	6	9	85	100	$\gamma=0.17$
E. To conserve limited road maintenance money:					
Campers (N=863)	39	28	33	100	$\chi^2=13.27$ ; $p \leq 0.001$ ;
Day users (N=1,199)	32	29	39	100	$\gamma=0.14$

1/ Numbers in parentheses indicate the number of users who responded.



Roads are often closed permanently or temporarily for a variety of purposes. Very often such closures are violated by recreationists who ignore the closure for one reason or another and go around or through gates. We asked respondents to indicate whether or not they agree that closures were alright for road maintenance or repair, to protect wildlife, to improve hunting quality, to reduce fire hazards, and/or to conserve limited maintenance money. These data indicate that, with the exception of hunting and conserving money, closures were acceptable to a large majority. The exception regarding hunting may result from not everyone being a hunter or disapproving of hunting per se and, therefore, of closures to improve hunting. Road closures because of limited budgets found less support than road closure for other reasons.

Figure 24.—Most forest roads are an artifact of timber management. About half the users want new roads opened for dispersed recreation in other areas but want no more built in the currently used areas.

nance or repair, to protect wildlife, to improve hunting quality, to reduce fire hazards, and/or to conserve limited maintenance money. These data indicate that, with the exception of hunting and conserving money, closures were acceptable to a large majority. The exception regarding hunting may result from not everyone being a hunter or disapproving of hunting per se and, therefore, of closures to improve hunting. Road closures because of limited budgets found less support than road closure for other reasons.



**Table 31—Users' opinions about the impact of logging on dispersed, roaded areas**

(In percent)

Questionnaire statement and user group	Response			Total	Statistical summary
	Disagree	Neutral	Agree		
The impact of logging on the landscape detracts from my enjoyment of dispersed road recreation areas:					
Campers (N=883) 1/	30	20	50	100	$\chi^2=4.47$ ; $p < 0.11$ ; not significant
Day users (N=1,230)	26	21	53	100	
This dispersed road recreation has been too heavily roaded and logged:					
Campers (N=878)	41	25	34	100	$\chi^2=36.10$ ; $p < 0.001$ ; $\gamma=0.12$
Day users (N=1,205)	30	35	35	100	
The size of clearcuttings that are alright in dispersed roaded areas are:					
A. Large					
Campers (N=861)	69	18	13	100	$\chi^2=0.0$ ; $p < 0.999$ ; not significant
Day users (N=1,178)	69	18	13	100	
B. Small					
Campers (N=877)	17	20	63	100	$\chi^2=5.87$ ; $p < 0.05$ ; $\gamma=-0.09$
Day users (N=1,210)	21	20	59	100	
Clearcut logging areas should be hidden from roadside view:					
Campers (N=872)	27	26	47	100	$\chi^2=0.16$ ; $p < 0.92$ ; not significant
Day users (N=1,204)	27	25	48	100	

1/ Numbers in parentheses indicate the number of users who responded.

**Impact of logging on recreation.**—Dispersed recreation in these and other areas has been occurring in conjunction with timber management for many years. Because this kind of recreation has largely been possible only because of timber management programs and the resulting roads, we question whether people would get more from this type of recreation if roads were built specifically for recreation without evidence of logging. Nearly half the campers and day users agree, in general, that logging detracts from their enjoyment (table 31). There was a large proportion of neutral responses, and 30 percent of the campers and 26 percent of day users disagreed. So half the respondents are not bothered by logging, in general, which is in sharp contrast to the opinion of Wilderness Area users (Hendee and others 1978).

When users were asked whether they thought the area they were in was too heavily logged, about one-third of the respondents agreed. Campers disagreed more than day users, but again there was a large neutral response. With no distinct answer to this or the preceding question, it appears that for many at least, logging is consistent and acceptable for the people presently using the areas. What cannot be determined is how many people like the types of opportunities roaded areas provide but are annoyed enough by the logging to stay away. They would not visit the areas we studied and, consequently, would not be included in our sample.

Clearcut logging is a common silvicultural treatment in each of the study areas. Clearcuttings vary in size and distance

from frequently used campsites. When we asked users to indicate if "large" and "small" clearcuttings were acceptable, they strongly rejected large clearcuttings but agreed that small ones were alright. We made no attempt to determine what size users consider large and small; it was only important to ascertain if users differentiate between sizes at all.

Visitors to the three study areas were also asked if clearcuttings should be hidden from roadside view. About half the respondents felt that such areas should be hidden, one-fourth did not think hiding them was necessary, and another fourth did not express an opinion. Campers in the upper Clackamas area were most likely to support hiding clearcuttings, perhaps because they felt the logged areas were more visible from the highway running through the area.

To gain further insight about this issue, we conducted informal conversations with some users in the Taneum-Manastash area during 1977. Here we attempted to determine how people felt about potential effects on their favorite dispersed campsite because of logging. These discussions indicated that about half the people we contacted felt strongly that the campsites were very important to them—there were no equally good sites should theirs be destroyed, and campsites adjacent to “greened-up” clearcut areas were not as good as sites where adjacent trees have not been removed. Most of the people preferred sites that are relatively natural in appearance (no logging evident).

Although these informal contacts may not represent the views of all users, they do help make sense of the findings from the survey. Several conclusions are apparent:

1. Some users do distinguish between the size of acceptable clearcuttings; smaller is better. But many do not find logging objectional per se.
2. Some users distinguish between the areas in general and sites in particular with regard to acceptable management practices. At the macrolevel (area-wide), logging (and clearcuttings) are acceptable; at the microlevel (site), naturalness is important, further indicating that the sites have high recreation values even in heavily logged areas.

These findings are consistent with the ROS framework in which the acceptability of other resource use varies by opportunity class (Clark and Stankey 1979b). That is, while people preferring primitive types of recreation settings would not accept logging under any circumstance (Hendee and others 1978), people preferring dispersed, roaded settings will either accept or reject such use, depending on the nature and extent of the logging (fig. 25).

**Grazing.**—Of the areas studied, the Taneum-Manastash is the only one where cattle grazing occurs. The practice is fairly widespread, and cattle are often found along roads and at campsites. After users were asked if grazing is acceptable, it was interesting to find that Taneum-Manastash users were more likely to agree than were people from other areas,



Figure 25.—Logging appears consistent and acceptable to many people presently using dispersed, roaded areas. Most agree, however, that small clearcuttings are better than large ones.

perhaps because they were accustomed to the practice. But we cannot be certain because we do not know if users in the other study areas have visited nonstudy areas where cattle were present (table 32). For many users in our study, grazing is an acceptable practice in areas they use for recreation.

**Motorcycles.**—Many motorcycles in dispersed recreation areas are not street legal; that is, they are not licensed, do not have safety equipment (lights, mirrors, etc.), and are operated by underage drivers. We asked respondents whether cycles should be legal on forest roads

Table 32—User’s attitudes toward sheep or cattle grazing in dispersed, roaded areas<sup>1/</sup>

(In percent)		
Questionnaire statement and response	Campers	Day users
Grazing by sheep or cattle is alright in dispersed road recreation areas:		
A. Disagree	28	27
B. Neutral	16	22
C. Agree	56	51
Total	100	100
Statistical summary	$\chi^2=11.98$ ; $p \leq 0.003$ $\gamma = -0.06$	

<sup>1/</sup> Based on the number of users who responded: Campers 870; day users 1,208.

and on trails. Results varied by area. In general, respondents in all areas were more likely to agree to street-legal requirements on roads rather than on trails and skid roads (table 33). Greatest agreement was in the upper Clackamas area where motorcycles of any kind are less common than in other areas. In the other two areas, distinct differences are obvious between campers and day users. Campers (who more frequently have motorcycles) generally reject street legal requirements more often than day users (fig. 26).

Table 33—User’s attitudes toward requiring motorcycles in dispersed, roaded areas to be “street legal”

(In percent)					
Questionnaire statement and user group	Response				Statistical summary
	Disagree	Neutral	Agree	Total	
All motorcycles should be "street legal"; that is, cycles should meet all state safety requirements and all drivers should be licensed:					
A. On forest roads:					
Campers (N=881) 1/	39	9	52	100	$\chi^2=86.60$ ; $p \leq 0.001$ ; $\gamma=0.35$
Day users (N=1,225)	21	10	69	100	
B. On trails and skid roads:					
Campers (N=876)	52	13	35	100	$\chi^2=88.41$ ; $p \leq 0.001$ ; $\gamma=0.35$
Day users (N=1,216)	33	12	55	100	

<sup>1/</sup> Number in parentheses indicate the number of users who responded.



Figure 26.—Motorcycles are popular for exploring logging roads. Although opinions varied, many respondents felt street-legal requirements on forest roads were more acceptable than on trails.

**Fire prevention programs.**—Respondents were asked to give their preference for different methods of fire prevention. Their preferences, summarized in table 34 are not necessarily related to effectiveness in the prevention of recreation-caused fires.

For the most part, users tend to be supportive of current practices, with no important differences between day users and campers. Both groups generally favor less restrictive procedures, with the exception that both groups agree that campfires should be prohibited when danger is high. In times of high risk, we observed that use goes down anyway, which may be a behavioral measure of users' concern for fire prevention. Yet, closing the areas or requiring permits are viewed as far less acceptable procedures, responses that could have been expected based on users' opinions of regimentation.

**Presence of agency personnel.**—Recreationists in dispersed, roaded areas are often contacted by patrols, primarily to warn them of the fire danger. When we asked users if the amount of patrols should be changed, less than 5 percent said "decrease" (table 35). A substantial number said "don't know," with the majority indicating patrols should be kept at the same level. But people in this study were contacted far more

**Table 34—Users' preferences for methods of fire prevention in dispersed, roaded areas<sup>1/</sup>**

(In percent)

Fire prevention procedure	Campers	Day users	Statistical summary
Carry shovel, axe, and bucket	90	87	$Z=1.35$ ; $p < 0.18$ ; not significant
Prohibit campfires when danger is high	79	88	$Z=-4.08$ ; $p < 0.001$
Fire prevention signs at campsites	82	87	$Z=-2.26$ ; $p < 0.02$
Fire patrols along roads alerting users to fire danger	50	50	$Z=0$ ; $p < 1.00$
Close area when fire danger is high	36	47	$Z=-4.97$ ; $p < 0.001$
Require fire permits	11	22	$Z=-4.95$ ; $p < 0.001$

<sup>1/</sup> Based on the number of users who responded: campers 898; day users 1,281.

**Table 35—Users' opinions about the frequency of ranger patrols in dispersed, roaded areas<sup>1/</sup>**

(In percent)

Questionnaire statement and response	Campers	Day users
The frequency of ranger patrols in this dispersed, roaded area should be:		
A. Increased	15	18
B. Same as present	59	41
C. Decreased	3	2
D. Do not know	23	39
Total	100	100

Statistical summary <sup>2/</sup>  $\chi^2=81.03$ ;  $p < 0.001$ ;  $\gamma = -0.26$

<sup>1/</sup> Based on the number of users who responded: campers 862; day users 1,178.

<sup>2/</sup>  $\gamma$  was calculated on all responses except "no opinion."

frequently by patrols than is standard because our research staff operated as patrollers and contacted camping parties several times. If respondents mean that patrols should be kept at the same level as during the study (where everyone was contacted at least once), that really means patrols should be increased. In any case, these data imply support for contacts with agency patrols. This study and other studies indicate that Forest Service patrols enjoy a positive image on the part of the public (Hendee and others 1976b, Muth and Clark 1978, Stankey 1973) (fig. 27).

**Table 36—Users' opinions about the presence of entry stations in dispersed, roaded areas<sup>1/</sup>**

(In percent)

Questionnaire statement and response	Campers	Day users
There should be an entry station for recreationists to check into and out of this area:		
A. Disagree	49	39
B. Neutral	20	27
C. Agree	31	34
Total	100	100

Statistical summary  $\chi^2=25.48$ ;  $p < 0.001$ ;  $\gamma = 0.13$

<sup>1/</sup> Based on the number of users who responded: campers 892; day users 1,228.

Only the Greenwater area had a formal entry station during the study. Users were stopped there and reminded to be careful with fires. When we asked users in all areas if there should be entry stations, there was substantially more disagreement in the Taneum-Manastash and Clackamas areas (table 36). Lack of experience with entry stations may explain why some people reject them. There was a relatively high proportion of neutral responses in all areas. It would appear that if entry stations were used to communicate information necessary to area users, most people would not object to them. Personnel at such points could also keep records about the visitors, which would aid in area management.

## Conclusions



Figure 27.—Forest Service rangers often contact recreationists, primarily to warn them of fire danger. Research indicates these personnel enjoy a positive image in the eyes of the public.

The sample used for the study represents the population that camped overnight or entered one of the study areas for day use during the summer and fall of 1976. The sample does not represent all recreationists using dispersed, roaded areas in Washington and Oregon, nor can it be applied to all of the areas used for dispersed, motorized recreation within the two States. The study does, however, shed light on the characteristics, preferences, and opinions of users of three diverse areas used for dispersed recreation that are similar to other areas in the Pacific Northwest. The overall consistency between responses in the three areas tends to indicate that some common traits exist in the types of areas and users studied.

Our informal observations and contacts with area users since 1977 do not indicate there have been any major changes since the study in the attitudes or preferences of visitors to these areas. We suspect that because of increasing energy costs and increased resource uses in several of the areas that some of the patterns of use may have changed. Research plans are to follow the development of recreational use and resource activities over a long period, including repeating the user survey in future years. The present data provide a baseline to evaluate changes that may occur.

Generalizations can be made about the results from our investigations of recreational use in the three areas under study. Although there is some danger of creating inaccurate stereotypes by presenting typical patterns, this summary is provided with the assumption that interested readers will study details of the findings to become sensitive to the diversity inherent in the populations studied.

1. Although we have called this type of recreation "dispersed" recreation, most of the use is generally concentrated in key locations along valley-bottom roads and streams. Use of other (and generally higher) areas is more diffuse with activities occurring mostly during the day. Exceptions occur during hunting season and periods of intensive use. And in some cases, people who want to get away from the relatively "crowded" areas select sites in more out-of-the-way locations.

2. Two apparent user groups exist in the areas studied: campers and day users. Although they share many attitudes, there are some significant differences in preferences and resulting patterns of use.

3. Group camping is the rule. Sites in the three areas studied often can accommodate relatively large parties compared to formal campgrounds. Intra-party socialization is an important part of dispersed, motorized recreation.

4. Not only do the users in the sample prefer the types of areas we found them in, but they most often use them as well. Lack of other, more desirable areas was not a reason they visited these locations, as has been suggested. Furthermore, the sample indicated that while their use of other types of settings (developed areas, for example) would remain about the same in the future, they would increase their use of dispersed, roaded areas.

5. There are several major reasons why people like dispersed, roaded areas: privacy from other people not in their party, lack of development, freedom, and the fact that camping in such areas is "their style." They do not like developed recreation settings because there are too many people and the sites are too developed.

Other major attractions are: viewing wildlife, getting away from others, ability to alter the sites to accommodate their needs, lack of regimentation and control, exploring little-used roads, lack of fees, and engaging in activities not allowed or appropriate elsewhere.

6. Most of the users learn about the areas through informal means (family or friends), and by exploring the roads; few learn from information supplied by agencies.

7. A high proportion are very familiar with the areas: they have been coming to the study site for an average of more than 7 years and most have favorite sites to which they usually return. Visitors are from nearby towns or metropolitan areas; few people travel long distances (more than 2 or 3 hours) to reach the areas.

8. Users are specific in site selection. Water, trees, level area, and a private site far away from people not in their party are characteristics they seek.

9. While at the sites, visitors engage in a variety of activities. In fact, all of the 39 activities listed had participants in each of the three study areas. Each area did have some activities which differentiated it from the other areas, but variety was the rule in all of them.

10. With a few exceptions, additional facilities and conveniences are generally not desired in any of the areas. Many users prefer to have some garbage cans, toilets, or water supplies but other data in the survey and conversation with users indicate that lack of facilities is acceptable. Some people expressed their concern that such "improvements" might attract other people, thereby increasing the competition for available sites.

11. In general, visitors of the three areas do not perceive many problems: litter and garbage, fires, noise, vandalism, and theft. This perception contrasts concerns expressed by managers in a companion study (Downing and Clark 1979, Downing and Moutsinas 1978). Users do want the Forest Service to alert them to hazards that might be present.

12. Users are split in their opinions about potential threats of human waste to their health and enjoyment. Lack of knowledge about potential hazards in drinking water from nearby streams and appropriate waste disposal methods is evident.

13. Opinions are divided about the desirability of new roads that would increase opportunities for dispersed, motorized recreation. Users indicate that opening new areas for such recreation is a good reason for building new roads, but they do not want more roads in the areas they visit.

14. Users do not want roads to be paved. Road access is obviously important, but paving evidently represents an unnecessary and perhaps detracting change for many of the recreationists.

15. Road closures are strongly supported for maintenance, wildlife protection, and reducing fire hazard but not for improving hunting quality or conserving limited maintenance money.

16. Users support all but the most restrictive fire prevention procedures. Signs (both at camps and along roads); fire patrols stopping at camps; prohibiting campfires when fire danger is high; and requiring axe, bucket, and shovel are acceptable to most users. Opinions are mixed about closing areas and managing entry stations. A few users would accept a requirement for a campfire permit.

17. Results of the survey plus our observations for more than 7 years indicate that for most of these users, other resource management practices are compatible with recreation. In fact, almost all the use in these areas is dependent upon logging and associated roads. Unlike Wilderness Area users, visitors to the dispersed, roaded areas studied do not object to logging (or grazing in one of the areas where it is common) *per se*. Although the size of clearcuttings and their location relative to roads and camp sites are important, dispersed-area recreationists do not reject logging and clearcuttings in their area as might Wilderness Area users.

18. Finally, users express strong support for the presence of agency personnel, ranger patrols specifically. The image created by the seasonal personnel who usually fill such positions is highly favorable, a view that can facilitate management of such areas in the future.

Nationally there are many opportunities for the type of recreation found in these three areas. For example, the USDA Forest Service and the U.S. Department of the Interior, Bureau of Land Management both have millions of acres of wildlands open to motorized vehicles, with a network of roads extending several hundred thousand miles. As part of the Forest Service recreation program, dispersed forms of outdoor recreation such as those described in this paper will be emphasized in the future (USDA Forest Service 1977).

The three areas we studied are different in terms of the recreation opportunities they provide in comparison to other opportunities along the Recreation Opportunity Spectrum (ROS). In contrast to developed, intensively used campgrounds found at the modern-urban end of the ROS (Clark and Stankey 1979b) these dispersed, roaded areas feature more rustic settings where formal

facilities are uncommon, recreation use is less concentrated, and far fewer regimenting influences exist. Compared to Wilderness Areas and roadless backcountry on the other end of the ROS, dispersed, roaded areas are accessible by motorized vehicles and allow a wide variety of both motorized and non-motorized recreation activities along the road system.

Visitors to the three areas seem to be different compared to users of modern and/or primitive areas. The results of this study clearly demonstrate that they choose to go to such areas because of the attractions provided there. As is suggested by the ROS framework, these users predominantly like the roaded access, yet most find unpaved roads acceptable; they enjoy the relatively low level of use and like sites isolated from others; they appreciate the self-regulating nature of these areas where they are free to do whatever they want and alter campsites to suit their objectives; and while generally accepting logging (and clearcuttings) to some degree, they seek naturalness and want favorite sites protected.

Although each of the three areas is different in terms of physical characteristics that increase the occurrence of certain activities, there also is a great deal of similarity. These areas are representative of a type of setting somewhere in the middle of the ROS, yet diversity and variety in terms of physical attributes and resulting activities is found both between the areas as well as within any one area. The goal of management should be to enhance this variety and diversity in ways consistent with ROS principles. It is not important that each area, or roads within a particular area, be managed in exactly the same fashion; it is only necessary that management recognize there is a range of appropriate conditions acceptable to users in dispersed, roaded areas. These areas are valuable because of a special combination and range of manageable conditions that easily can be enhanced—or that just as easily can be destroyed if explicit recreation management goals are not clearly stated in advance.

The recreation use investigated in this study was possible only because of the road systems developed for other resource programs, primarily logging. The results indicate that resource uses such



as timber are generally consistent with the values and goals of the recreationists who use the areas. These users do not reject such practices as might people who prefer the more primitive styles of outdoor recreation. Consequently, it seems important that planners and managers examine multiple use programs to see where current practices might be modified to maximize the benefits of dispersed, motorized recreation while minimizing conflicts. Road design and timber sale layout might be altered in such ways to increase the ability of users of these areas to find the kind of setting most to their liking. Research seems to indicate that multiple use of the same lands for recreation and other resource programs is not only practical in these areas, but desired by a segment of the public as well.

But the observations and findings from this research should not be construed as a reason or excuse to log previously unlogged areas. Rather, the results discussed indicate that when a decision is made to harvest timber for commodity values, it may also be possible to provide some quality recreation opportunities in such areas. There may also be situations, however, where silvicultural alternatives should be considered expressly for recreation, rather than production of commodities. Management objectives will guide such decisions.

Because a policy of National Forest management is to place increased emphasis on dispersed forms of outdoor recreation, it is important that recreation sites used frequently, or those that have special qualities, deserve consideration in land use planning. It seems particularly important that all functional areas of resource management (for example, fire, timber management, engineering, recreation, and others) utilize such information in their programs so that recreation sites established by users are not lost inadvertently. The fact that so many people have been coming to these areas frequently for many years indicates that these locations have some special appeal for them. Future management programs must consider the value recreationists place on these attractions and the noneconomic as well as economic costs associated with altering those settings.

Of primary concern to managers and recreationists alike should be the identification and protection of attractive sites for dispersed, motorized recreation. The campsites seem to be particularly important and are often destroyed unknowingly as part of other resource activities. By identifying where sites are, and determining which ones have frequent use and/or special appeal, managers are better able to insure their use in the future. But it is clear that areas like those under study will always be in a constant state of change. This seems particularly true in forested areas with mixed land ownership and with multiple-use objectives. Undoubtedly some prime locations will be lost as resource programs evolve. For example, Code-A-Site inventories conducted in the Greenwater area in 1975 and then again in 1978 indicate that 57 percent of the original sites no longer existed: 37 percent were destroyed by management and 17 percent through flooding. With knowledge about what are the important recreation opportunities in an area, such changes can be made as a part of a planned effort rather than inadvertently because of oversight. And with information about what users define as being of value to them, planners are better able to identify new locations in the inventory and planning processes before presently roadless areas are opened for motorized entry.

Results of this study clearly document the self-regulating nature of recreation in these areas. These users have found areas to their liking and, by exploring similar places, may find additional appealing sites. The role of visitor information services seems important in facilitating this process so that they are able to find their brand of outdoor recreation. At present, little information exists through formal channels about the nature of the recreation opportunities on lands open to the public. It would seem helpful to map not only existing transportation systems (roads and trails), as is currently done by several agencies on maps available to the public, but also to identify the type of recreation settings they can expect (modern-urban to primitive, in ROS terminology). Such delineation is presently being done as part of a nationwide recreation opportunity inventory by the Forest Service, and this information, if available to the public, would aid users with decisions about where to go to meet their expectations. Any public information

system should also include knowledge about what is acceptable behavior in these areas. The "no trace camping" ethic endorsed by the USDA Forest Service in primitive areas, for example, might be expanded to dispersed, roaded areas as well.

The role of the ranger seems particularly important in providing such information. Results of this study show the wide acceptance of contacts by agency personnel. Other studies on litter control (Clark 1976, Muth and Clark 1978) also show a generally positive acceptance of uniformed personnel. Our observations indicate that such contacts seem to work best when information is transmitted about how a problem can be solved rather than an admonishment to "be careful." For example, a major concern in the areas studied was fire; most ranger patrols were in the areas primarily to warn users about fire dangers. In some instances sites were "fireproofed"; that is, a ranger moved any hazardous material and built an appropriate firerig in the absence of recreationists. Often, however, when users arrived they would alter the site (a major appeal of these areas) and move the firerig to a place in keeping with their goals. But the new location might not be appropriate from a fire prevention perspective. Consequently, we recommend that whenever possible rangers show the campers, children in particular, how to build a safe firerig. With this new knowledge they are more likely to alter sites in appropriate ways in the future.

What the future holds for dispersed, motorized recreation is unclear. Energy shortages and increasing gasoline prices make it difficult to predict how much of this type of recreation will be desired or possible in the future. Users in this study indicate that while they intend to do more of this type of recreation in the future, they will make trips to nearby areas rather than travel long distances. Public lands near metropolitan areas, like the three we studied, therefore, might see increases in the future. And, we might see a shift away from large vehicles and trailers to more economical and fuel-efficient RV's. If the recreation opportunities studied are as unique and appealing as this study seems to indicate, this use is likely to continue and even increase into the future. Long-term studies will be necessary to document any changes that might occur.

## Acknowledgment

As a final point, we must emphasize that whether managers are aware of it or not, practices they follow on forest lands open to public use will affect the nature of dispersed recreation opportunities and the enjoyment and experiences of users. Many options exist that will either hinder or facilitate recreation activities, and many of the latter would require little investment of time or money. The key is to make goals and objectives explicit prior to action, a practice requiring that recreation management objectives be integrated and coordinated with other multiple-use objectives prior to resource inventory.

In short, there seems to be a great potential for increasing the amount and quality of dispersed recreation opportunities in roaded forests. Only the sensitivity of managers and their creativity in finding ways to accommodate forest visitors will maximize such options. As presently roadless areas are opened for resource development, or roaded areas are re-entered, there is the opportunity to provide recreation values in conjunction with primary extractive uses at apparently little cost in terms of budget and time. This would seem to be particularly important in forests near communities so that the public can have energy-efficient access to a range of desirable opportunities. The alternative may lead to less-than-optimum conditions for both the manager and visitor, resulting in displacement of use from one area to another and the unnecessary loss of prime recreation habitat.

Diane Samdahl performed the statistical analysis of the data. Portions of the research were conducted under a cooperative agreement with the College of Forest Resources, University of Washington, Seattle.

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The value of roaded, multiple use areas as recreation sites in three National Forests of the Pacific Northwest. Res. Pap. PNW-319. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station; **1984**. 40 p.

Dispersed recreation along forest roads in generally undeveloped areas is increasing rapidly in the West. To effectively manage this use and integrate it with other forest activities requires information about the preferences, expectations, and opinions of forest visitors and their patterns of recreation use. Results of a 3-year study of campers and day users in three roaded forest areas of Washington and Oregon suggest this type of area provides opportunities that are very different from those in developed campgrounds and primitive backcountry. Visitors to roaded, forested areas like the generally unpaved road access, the low level of use, and the freedom to alter campsites to suit their objectives. Although this type of recreation is found in conjunction with resource management activities, such as logging and livestock grazing, recreationists do have favorite sites they return to year after year. Such sites may, therefore, warrant some protection. Future management programs must consider the value recreationists place on these sites and area attractions and the noneconomic as well as economic costs associated with altering these settings.

**Keywords:** Dispersed recreation, recreation (dispersed), recreation use, roads (forest), logging effects, recreation management, multiple use →recreation, recreationists.

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